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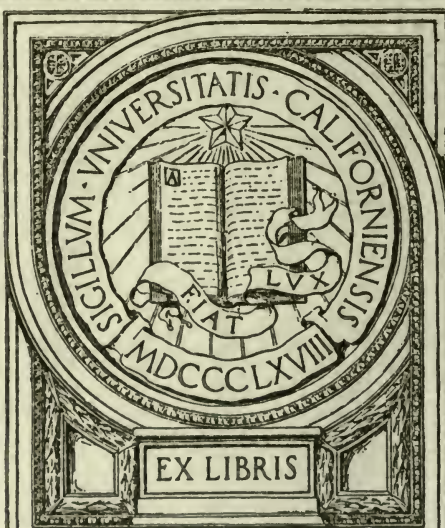
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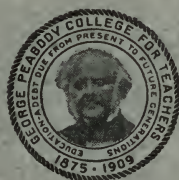
HOW THE LAND-GRANT COLLEGES ARE PREPARING SPECIAL TEACHERS OF AGRICULTURE

EXCHANGE
JUN 14 1933

BY
ASHLEY V. STORM, PH. D.

GEORGE PEABODY COLLEGE FOR TEACHERS
CONTRIBUTIONS TO EDUCATION
NUMBER FIVE

No. 5



PUBLISHED UNDER THE DIRECTION OF
GEORGE PEABODY COLLEGE FOR TEACHERS
NASHVILLE, TENN

EXCHANGE

Submitted in partial fulfillment of the
requirements for the

DEGREE OF DOCTOR OF PHILOSOPHY

in the Graduate School of Education of

George Peabody College for Teachers

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TABLE OF CONTENTS.

	Page
Introduction	7
Purpose	7
Scope	7
Data	8
Sources	6
Reliability	9
Probability of Error	9
Methods of Study	9
Historical	9
Current Conditions	9

CHAPTER I.

ORIGIN AND DEVELOPMENT OF THE LAND-GRANT COL- LEGES	11
State Activities	11
Federal Activities	12
First Morrill Act	13
Hatch Act	14
Second Morrill Act	14
Adams Act	15
Nelson Amendment	15
Smith-Lever Act	15
Smith-Hughes Act	16
Magnitude of Land-Grant Colleges—Statistics	17
Classification of Land-Grant Colleges	18
Evolution of Teacher Training in Land-Grant Colleges	18
Conclusions	26

CHAPTER II.

THE ADMINISTRATION OF THE TRAINING OF SPECIAL TEACHERS OF AGRICULTURE IN THE LAND-GRANT COLLEGES	27
Section 1. THE FACTS	27
Where the Administration Is Organized and Who Administers	28
Separate Departments	29
Departments Not Separate	29
Approval of Specified Required Curriculum	30
Choice of Curriculum by Head of Teacher Training	31
Approval of Preparation of Prospective Teacher	31
Section 2. THE INTERPRETATION	32
Separate Departments	32
Name of Department	33
In What College	33
Nearness to President	34
Control of Curriculum and Recommendation for Completion	35
Approval of Preparation	37
Section 3. THE CONCLUSION	38

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CHAPTER III.

	Page
IN WHAT COLLEGES OF THE LAND-GRANT INSTITUTIONS THE PROSPECTIVE SPECIAL TEACHER OF AGRICUL- TURE OBTAINS HIS EDUCATION AND THE QUALIFICA- TIONS AND RANK OF THOSE WHO TEACH HIM.....	40
Section 1. THE FACTS.....	40.
Distribution of His Work Among Colleges.....	40
Agricultural Faculty	41
Education Faculty	42
Professorial Rank	44
Section 2. THE INTERPRETATION.....	46
Where He Is Taught.....	47
The Agriculture Faculty.....	48
The Education Faculty.....	49
Degree Comparison of Faculties.....	49
Preparation and Experience of Education Faculty.....	49
Professorial Rank	53
Section 3. THE CONCLUSIONS.....	54

CHAPTER IV.

SPECIAL FITNESS REQUIRED FOR ENTERING UPON COL- LEGIATE PREPARATION AS A SPECIAL TEACHER OF AGRICULTURE	56
Section 1. THE FACTS.....	56
General Entrance Requirements.....	56
Changes in Entrance Requirements.....	59
Comparison of Entrance Requirements.....	59
When Differentiation Begins.....	59
Evidence of Special Fitness.....	60
Section 2. THE INTERPRETATION.....	60
Entrance Requirements.....	60
Differences in Entrance Requirements.....	62
Differentiation of Curriculum.....	63
Evidence of Special Fitness.....	63
Section 3. THE CONCLUSIONS.....	64

CHAPTER V.

WHAT THE PROSPECTIVE SPECIAL TEACHER OF AGRI- CULTURE STUDIES.....	66
Section 1. THE FACTS.....	66
Specified Required Curriculum.....	66
What This Curriculum Contains.....	66
Agriculture Distribution.....	68
Education Distribution.....	69
Section 2. THE INTERPRETATION.....	70
The Specified Required Curriculum.....	70
Curriculum Distribution.....	72
Distribution of Agriculture.....	74
Distribution of Education.....	76
Section 3. THE CONCLUSIONS.....	79

Table of Contents

5

CHAPTER VI.

	Page
THE PRACTICE TEACHING WORK OF THE PROSPECTIVE TEACHER OF AGRICULTURE.....	81
Section 1. THE FACTS.....	81
Where Practice Teaching Is Done.....	81
Who Does the Practice Teaching.....	82
Amount and Kind Required.....	84
Prerequisites for Undertaking.....	85
Who Sanctions Undertaking.....	88
Who Acts as Critic.....	89
Whom Practice Teacher Teaches.....	91
Does He Teach Agriculture.....	92
What Agriculture Does He Teach.....	92
How Many Agricultural Subjects Must He Teach.....	92
Who Decides the Subjects to Be Taught.....	93
Determination of General Content Taught.....	93
Determination of Content of Day's Lesson.....	93
Who Makes the Lesson Plans.....	93
Kinds of Conferences on Practice Teaching.....	94
Section 2. THE INTERPRETATION.....	94
Kinds of Schools for Practice Teaching.....	94
Number of Kinds of Schools Used.....	95
Who Does Practice Teaching.....	95
Variations in Practice Teaching for Experienced.....	96
Amount of Practice Teaching and Observation.....	96
Kinds of Teaching Observed.....	97
Prerequisites for Practice Teaching.....	97
From What Classes Practice Teachers Come.....	97
Sanctioning Entering Upon Practice.....	98
The Critic Teacher.....	98
Number Critic Teachers.....	99
What the Critics Do.....	99
Observing and Practice Teaching Classes.....	100
What He Teaches.....	100
What Agriculture He Teaches.....	100
Number of Subjects He Teaches.....	101
Who Chooses the Subject Taught.....	102
Content of the Day's Lesson.....	102
Lesson Plan Making.....	102
Watching and Criticizing the Practice Teacher.....	103
Conferences on Practice Teaching.....	103
Specific Plans of Certain Institutions.....	104
California.....	104
Georgia.....	104
Massachusetts.....	104
Minnesota.....	104
New York.....	105
North Carolina.....	107
Ohio.....	107
Vermont.....	108
Section 3. THE CONCLUSIONS.....	108

CHAPTER VII.

	Page
TRAINING TEACHERS WHILE IN SERVICE.....	111
Section 1. THE FACTS.....	111
Who Trains the Teacher in Service.....	112
How Those Who Train Coöperate.....	112
Special Teachers in Service in a State Wherein They Were Not Trained.....	113
The Trainers of Those from Other States.....	113
Instructors' Visits to Teacher in Service.....	113
How Often Visits Made.....	113
Length of Visits.....	114
Character of Help Given.....	114
Instructor's Reports of His Training Visits.....	115
How Often Reports of Visits Made.....	115
To Whom Trainer Reports.....	115
Nature of Reports.....	115
Reports of Teacher to Training Instructor.....	116
Frequency of Teacher's Reports.....	116
Principal Feature of Teacher's Reports.....	116
Correspondence Courses for Training in Service.....	117
Reading Courses for Training in Service.....	117
How Reading Courses Are Used.....	117
Conferences Used for Training in Service.....	117
Teachers in Service Visiting Other Schools.....	118
How Visits Are Made.....	118
Teachers in Service Attending College.....	119
How Long Attend College.....	119
What Time of Year Attend College.....	119
Section 2. THE INTERPRETATION.....	119
Who Trains the Teacher in Service.....	119
Coöperation in Training in Service.....	120
Training by Visits.....	120
Character of Help Given.....	121
Instructors' Reports of Visits.....	122
Reports of Teacher to Instructor.....	123
Conferences for Training in Service.....	123
Teachers Visiting Other Schools.....	124
Teachers in Service Attending College.....	124
Section 3. THE CONCLUSIONS.....	125

CHAPTER VIII.

DISCUSSION OF CONCLUSIONS.....	128
Bibliography	135

INTRODUCTION

PURPOSE

During the recent past there has developed an increased general interest in agriculture. In the early years of the period of most marked increase in this interest a demand arose for the teaching of agriculture in the elementary and secondary schools. This was quickly followed by a demand that agriculture be made a department of instruction in the secondary schools, and that the teacher of this subject be specially trained for the distinct duty of teaching agriculture. Meanwhile the popularity of agricultural extension work had been developed.

It was soon seen that this new type of teacher must be equipped to teach agriculture as a specialty, to adapt this teaching to a full four-year course in the secondary school, and also to teach in the rural school and in the elementary grades of the town or city school, and, in addition, to perform the functions of an extension worker for that portion of the community not in attendance upon school.

The need of a teacher so specifically and yet so broadly trained immediately raised the question of the need of a suitable institution in which to train him.

The adaptability of the normal school to the giving of an elementary knowledge of agriculture to those teachers whose major work is the teaching of other subjects has been shown (National Education Association Proceedings, 1913, pp. 516-21), but the training of a specialist in agriculture who is to teach that subject almost exclusively requires a different type of institution.

A people who had become accustomed to depending upon the land-grant colleges for their needs regarding agriculture naturally looked to those institutions for this new type of teacher.

The land-grant colleges, with their innumerable and vital points of public contact and with a well-developed policy, not only of sensing the public wishes, but of responding to them, evolved steadily, but quite rapidly, facilities for training these special teachers of agriculture.

To learn how these institutions as a class are performing this function is the purpose of this study.

SCOPE

This study is limited to the land-grant colleges, frequently called "agricultural and mechanical colleges" or "colleges of agriculture and mechanic arts," established by the Federal Land Grant of 1862 and subsequent statutes.

It is further limited to those colleges of this class which are devoted to whites and are located in continental United States—one only in each state.

It is still further limited to their plans and practices in the training of special teachers of agriculture, save where some other feature of their affairs is included in order to better understand their work in the field under investigation.

No attempt is made to deal with the student body quantitatively—first, because, it is not necessary to the proper pursuit of this study, and, second, because the abnormal conditions regarding student numbers due to war would make conclusions based upon such data practically valueless.

DATA

Sources.—The sources of information were certain historical authorities from which were gathered the data regarding the origin and evolution of the land-grant colleges; certain current authorities regarding colleges, schools, and teacher training; and recent direct information from the land-grant colleges themselves. The information from these institutions was obtained from catalogs, bulletins, circulars, correspondence, and a questionnaire.

This questionnaire, which consisted of a set of questions providing for a possible 265 items of reply from each land-grant college, was sent to the person responsible for the training of special teachers of agriculture in the land-grant college for whites in each of the forty-eight states. Forty-four of these states—viz., Alabama, Arizona, Arkansas, California, Colorado, Connecticut, Florida, Georgia, Idaho, Illinois, Indiana, Iowa, Kansas, Kentucky, Louisiana, Maine, Maryland, Massachusetts, Michigan, Minnesota, Mississippi, Missouri, Montana, Nebraska, New Jersey, New Mexico, New York, North Carolina, North Dakota, Ohio, Oklahoma, Oregon, Pennsylvania, Rhode Island, South Carolina, South Dakota, Tennessee, Texas, Utah, Vermont, Virginia, West Virginia, Wisconsin, and Wyoming—responded by returning the questionnaire more or less completely filled according to the conditions prevailing at that institution.

The men from these states who replied to this rather extended questionnaire were an essential factor in making this study. Without the recent, definite, and dependable facts furnished by them about their several institutions, this study could not well have been made, or, if attempted.

would have been almost devoid of whatever value it may now possess.

One state (Nevada) expressed a willingness to assist in the study, but indicated that the small number of high schools studying agriculture in that state made it possible to obtain teachers trained in other states, and the training of this type of teachers had not progressed sufficiently in that state to warrant attempting to fill the questionnaire.

Delaware, New Hampshire, and Washington furnished no questionnaire replies.

Reliability.—Many of the sources are government publications, and for that reason may be assumed to be unbiased and dependable. The questionnaire replies and the personal letters are from persons very familiar with the subject-matter and skilled in questionnaire processes. The results are, for these reasons, worthy of confidence.

Probability of Error.—Since the facts relate only to the land-grant colleges for whites in continental United States and since questionnaire replies were received from 91 2-3 per cent of these institutions, the probability of error due to insufficient or poorly selected data is very small. The probability of error due to lack of ability of those reporting to properly interpret the significance of the questionnaire is very small, because of their good general education, as well as of their superior technical knowledge of the topics of the questionnaire.

While the small number of instances involved might be thought to be a source of error, the small total possible number of instances due to the maximum number of land-grant colleges being only forty-eight makes this less serious than might at first appear.

METHODS OF STUDY

Historical.—Those portions dealing with the historical features were investigated in the usual way through library research.

Current Conditions.—The study of the current practices in the land-grant colleges regarding their work of preparing special teachers of agriculture was mainly through the questionnaire before mentioned, supplemented by correspondence and by personal visits to some of the land-grant colleges. The questionnaire replies were placed in reference tables, twenty-three in number, in which the states are arranged alphabetically, and the facts from the various states reporting are classified and placed in 220 columns according to content. A copy of the questionnaire and of the alphabetic reference tables will be found on file in the library of Pea-

body College, Nashville, Tenn., and in the University Farm Library, University of Minnesota, St. Paul, where they are available for public consultation.

All data used from the questionnaire and the reference tables will be found in distribution tables or other tables in Section 1 of Chapters II to VII, inclusive, of this dissertation.

ORGANIZATION OF TOPICS

So far as possible, the chronological sequence is followed in Chapter I. The treatment of current conditions is that of first devoting one of each of Chapters II to VII to a major phase of teacher training and then dividing each chapter into three sections, of which Section 1 deals with the facts; Section 2, the interpretations; and Section 3, the conclusions regarding that major phase. As is more fully shown in the Table of Contents, the major phases are Administration, the Faculty, Entrance, Studies, Practice Teaching, Training in Service. Chapter VIII contains the general discussion.

CHAPTER I

ORIGIN AND DEVELOPMENT OF THE LAND-GRANT COLLEGES

In considering what the land-grant colleges are doing in the preparation of special teachers of agriculture, it may be pertinent to ask the following questions—viz.: What are the land-grant colleges? Is there in their origin and history that which especially fits them to bear the great responsibility of preparing special teachers of agriculture?

To answer these questions, the following brief account is given of their statutory origin and development, their geographical distribution within continental United States, and specific events showing their activities in connection with the training of teachers during the recent period in which there has been a demand for the teaching of agriculture in schools of elementary and secondary grade:

THEIR ORIGIN IN STATE AND FEDERAL STATUTES

The land-grant colleges originated in an Act, since called the "First Morrill Act," passed by the United States Congress and signed by President Lincoln, July 2, 1862. (F. W. Blackmar, "History of Federal Aid to Higher Education in the United States.") The passage of the Act had been preceded by many attempts to establish, through philanthropic or local or state efforts, colleges and schools for teaching agriculture and the mechanic arts. These attempts were the outgrowth of the developing protest against the classical character of the education of the period covered by the late eighteenth and early nineteenth centuries, and were furthered by the many societies organized to foster interest in agriculture. (I. L. Kandel, "Federal Aid for Vocational Education.")

State Activities.—The states preceded the federal government in this movement to establish educational institutions for agriculture and the mechanic arts. Even as early as 1823 a bill was introduced in the New York Legislature to establish a school of agriculture. (Ibid.)

In 1849 the Michigan Legislature instructed its "delegation in Congress to use all honorable means to procure a donation of 350,000 acres of land for the establishment of agricultural schools in the state." (Dick J. Crosby, "Progress in Agricultural Education," 1909.) The State Constitution, adopted in 1850, required that "the legislature shall provide for the establishment of an agricultural school for agriculture and the natural sciences connected therewith."

The college was established in 1855 and opened for students in 1857. (A. C. True, "Progress in Agricultural Education," 1905.) The state accepted the provision of the land grant in February, 1863. (United States Bureau of Education, 1918, No. 13.)

In Pennsylvania the State Legislature granted a charter in 1855 for "the Farmers' High School," which was not opened for students until 1859. It began work as a land-grant college in 1864. (United States Bureau of Education, 1918, No. 13.)

The Maryland Agricultural College was chartered as a private corporation in 1856, the corner stone was laid in 1858, and it was opened for students in 1859. (Dick J. Crosby, Report Office Experiment Stations, 1906.) The institution did not come under the full control of the state until 1914. (United States Bureau of Education Bulletin, 1918, No. 13.)

The Massachusetts School of Agriculture was incorporated in 1856, but was not practically established until the passage of the First Morrill Act of 1862, when the State Legislature designated the Massachusetts Institute of Technology, in Boston, to receive the federal grant for instruction in the mechanic arts, and the agricultural college at Amherst for that in agriculture. The latter institution has the distinction of being the only land-grant college devoted to agriculture and *not* to the mechanic arts.

"To Michigan, therefore, belongs the honor of having been the first of the states to put in actual operation an educational institution for the direct promotion of technical training in agriculture." (United States Department of Agriculture Year Book, 1894, p. 91.)

Federal Activities.—While local sentiment was developing into state action, proposals were not lacking for federal participation in the education of the people in agriculture. Among other efforts, much influence was exerted to have the James Smithson bequest* to the United States (1835) devoted to the establishment of a school to contain "a professor of agriculture, a normal department, a professor of common-school instruction, and such other professors, chiefly of the more useful sciences and arts, etc." (I. L. Kandel, "Federal Aid for Vocational Education.")

While many were memorializing Congress to aid the cause of agriculture in one way or another, Prof. Jonathan B. Turner, of Illinois College, seems to be the first person to publicly propose a plan for an industrial university, which approximated the plan finally incorporated into the

*Later used to establish the Smithsonian Institute.

Acts of Congress creating the land-grant colleges. Mr. Turner made his proposal in 1851.

Mr. Justin S. Morrill, a member of the United States Congress from Vermont, introduced his first bill in December, 1857. After experiencing the usual vicissitudes of so new a measure, the bill was vetoed by President Buchanan. Mr. Morrill introduced another bill in December, 1861. In June, 1862, this passed the Senate by a vote of 32 to 7 and the House by 90 to 25, and twelve days later was signed by the President. (*Ibid.*)

The Morrill Act (July 2, 1862).—The vital provisions of this federal statute are easily epitomized. Each state was granted 30,000 acres of land for each Senator and Representative in Congress to which it was entitled by the census of 1860 for the purpose of endowing "at least one college where the leading object shall be, without excluding other scientific and classical studies and including military tactics, to teach such branches of learning as are related to agriculture and the mechanic arts, in such manner as the legislatures of the states may respectively prescribe, in order to promote the liberal and practical education of the industrial classes in the several pursuits and professions of life."

If any state had not enough public land within its borders to furnish its allotment, land scrip should be issued for the deficit. This the state could sell and the purchaser could use to locate land in other states. The land or scrip was to be sold by the state and the proceeds to constitute a permanent fund, the income of which was to be used for supporting the college. None of the money could be used for "the purchase, erection, preservation, or repair of any building or buildings," though 10 per cent could be used for sites or experimental farms. The state must replace any impairment of the funds. To become operative in any state required acceptance by the state within two years and establishment of the college within five years.

"No state while in a condition of rebellion or insurrection against the government of the United States shall be entitled to the benefit of this Act." It was required that an annual report be sent by each college to the federal government and to each of the other colleges. (No. 12, Statutes at Large, p. 503.)

The amendment of 1864 extended the time for the acceptance by the states that had not yet accepted and specifically extended the benefits to West Virginia.

The amendment of 1866, by again extending the time for acceptance and fulfillment of conditions, made possible the

obtaining of the benefits by the states formerly in rebellion, and also made provision for states subsequently admitted to participate on the same basis as those originally included in its provisions.

The amendment of 1883 relates to the details of financial requirements. (See Statutes.)

The Hatch Act.—In 1887 Congress passed the Hatch Act, “to establish experiment stations in connection with the colleges established in the several states under the provisions of” the First Morrill Act “and Acts supplementary thereto.” The purpose of establishment is declared to be “to aid in acquiring and diffusing among the people of the United States useful and practical information on subjects connected with agriculture and to promote scientific investigation and experiment respecting the principles and applications of agricultural science.”

These stations must be “under the direction of the college or colleges in each state or territory established or hereafter to be established in accordance with the provisions of” the First Morrill Act and Acts supplementary thereto.

A report of operations and finances must be made annually to the governor of the state and to the United States Department of Agriculture.

Bulletins must be issued at least quarterly, and must be sent to each newspaper in the state and to each person actually engaged in farming who makes request for the same. Such bulletins are sent postage free. Each state is to receive \$15,000 annually, paid quarterly in advance. Of this, not more than 15 per cent of the first year and not more than 5 per cent of any subsequent year may be spent for a building or buildings. Each state must formally accept the provisions before it becomes entitled to participation in the benefits of the Act. (United States Bureau of Education Commissioner’s Report, 1902, Vol. I, p. 34.)

The Second Morrill Act.—This was passed in 1890 for the purpose of adding to the present grant of land of the First Morrill Act federal moneys “for the more complete endowment and maintenance of colleges for the benefit of agriculture and the mechanic arts” established under the First Morrill Act and Acts subsequent thereto.

An annual federal appropriation to each state (maintaining such a college or colleges) of \$15,000 for the year ending June 30, 1890, and an annual increase of \$1,000 each year over the preceding year for ten years and \$25,000 annually thereafter, is made, provided no distinction of race or color be made in the admission of students,

though separate colleges for colored students may be established, provided the funds be equitably divided.

The moneys must be used for "instruction in agriculture, the mechanic arts, the English language, and the various branches of mathematic, physcial, natural, and economic science, with special reference to their application in the industries of life and to the facilities for such instruction."

Annual reports are required to be sent to the Secretary of Agriculture, the Secretary of the Interior, and to each land-grant college. (No. 26, Statutes at Large, p. 417; also United States Bureau of Education Commissioner's Report, 1902, Vol. I, p. 4.)

The Adams Act.—This Act, passed in 1906, adds to the annual appropriation of the Hatch Act \$5,000 for the year ending June 30, 1906, and an increase of \$2,000 per year over each succeeding year for a period of five years, so the total amount thereafter shall be \$30,000 annually to each state maintaining an experiment station under the provisions of the Hatch Act. These funds are "to be applied only to paying the necessary expenses for conducting original researches or experiments bearing directly on the agricultural industry of the United States." (United States Bureau of Education Commissioner's Report, 1906, Vol. II, p. 1240.)

The Nelson Amendment.—This amendment to the appropriation bill for the Department of Agriculture, approved March 4, 1907, providing further aid to the colleges of agriculture and mechanic arts established and conducted under the First and Second Morrill Acts, states "that colleges may use a portion of this money for providing courses for the special preparation of instructors for teaching the elements of agriculture and mechanic arts." The bill of which this amendment was a part increased the appropriations of the Second Morrill Act by \$5,000 for the year ending June 30, 1908, and an additional \$5,000 per year thereafter over the amount of the preceding year until the total amount to be appropriated annually under this Act and the Second Morrill Act is \$50,000 to each state. (United States Bureau of Education Commissioner's Report, 1907, Vol. II, p. 869.)

The Smith-Lever Act.—This Act, to provide for coöperative agricultural extension work between the United States and the agricultural colleges of the states receiving the benefits of the First Morrill Act and Acts supplementary thereto, was passed by Congress and approved May 8, 1914.

The purpose was to give instruction and practical demonstrations in agriculture and home economics to persons

not attending or resident in colleges, the manner of work to "be mutually agreed upon by the Secretary of Agriculture and the State Agricultural College."

Appropriations were made of \$480,000 the first year, \$10,000 to each state; after that, \$600,000 for the first year and a sum exceeding by \$500,000 the amount of the preceding year for seven years; thereafter, \$4,100,000 in addition to the original \$480,000 (or \$4,580,000), each state participating in the \$4,100,000 in the ratio which its rural population bears to the total rural population of the United States. No money shall be used for buildings, lands, college-course teaching, lectures in colleges, or for agricultural trains, and only 5 per cent shall be applied to printing and distribution of publications. Each state must expend one dollar of its own money in addition to each dollar of federal funds received above the \$10,000 original apportionment.

Each state must report annually to the Secretary of Agriculture, and he to Congress; and each state must reimburse the federal government for any federal money lost or misapplied.

The Smith-Hughes Act.—This Act, passed by the United States Congress and approved February 23, 1917, provides for coöperating with the states in the promotion of vocational education and the preparation of teachers therefor by appropriating, for coöperating with the states in paying salaries of teachers, supervisors, and directors of supervisors of agriculture, \$500,000 for the year ending June 30, 1918, and increasing until the year 1926, when it shall be \$3,000,000, this amount to be appropriated annually thereafter, the money to be apportioned among the states in the proportion of the state's rural population to the United States rural population, not including outlying possessions, with a certain minimum allotment to each state; by appropriating, for coöperating in preparing teachers of agriculture, trade, and industrial subjects and home economics, \$500,000 for the year ending June 30, 1918, and increasing till the year June 30, 1921, when it shall be \$1,000,000, and continue at that amount annually thereafter, the money to be apportioned to each state in the ratio which its total population bears to the total population of the United States, with a minimum amount for each state.

A Federal Board for Vocational Education is created, consisting of the Secretary of Agriculture, Secretary of Commerce, Secretary of Labor, Commissioner of Education, and three citizens appointed by the President—one to represent agriculture; one, labor; and one, manufacturing and

commercial interests. It provides that any state, to receive the benefits of the Act, must accept the provisions; designate or create a state board; provide plans of its proposed work; report annually to the federal board; expend from state or community funds one dollar in addition to each dollar of federal funds received; that schools must be under the public control; that candidates for teachers must have had adequate vocational experience; that the state must reimburse the federal government for lost funds; that no moneys shall be expended on buildings, equipment, or lands; that the federal board must report to Congress annually.

The \$50,000 appropriation of the Acts of 1890 and 1907 is received by each of the forty-eight states and also by Porto Rico and Hawaii. (United States Bureau of Education Report, 1917, Vol. II, pp. 371-372.)

MAGNITUDE OF THE LAND-GRANT COLLEGES AS SHOWN BY STATISTICS

The following official statistics are significant of the growth of the land-grant colleges from nothing in 1862 to these values in the year 1916-17. (United States Bureau of Education, 1918, No. 41.)

STAFF	
Instructors and experimenters -----	10,344
ENROLLMENT	
Students -----	133,405
DEGREES CONFERRED	
Bachelors -----	11,361
Advanced -----	1,313
PROPERTY	
Endowment funds -----	\$ 66,367,086
Buildings -----	65,619,208
Farms and grounds -----	30,937,913
Apparatus and machinery -----	22,198,115
Library -----	6,685,958
Live stock -----	1,599,928
Total -----	\$193,408,218
INCOME	
State aid (appropriations) -----	\$ 21,378,962
College funds (tuition, endowments, etc.) -----	12,775,117
Extension funds (states, United States, local, etc.) -----	4,513,718
Experiment stations (states, United States, etc.) -----	4,414,419
Federal aid (land and money grants) -----	3,687,181
Total for year -----	\$ 46,769,397
LANDS	
Acres allotted by federal government -----	11,050,000
Acres in farms and grounds -----	22,861

CLASSIFICATION OF THE LAND-GRANT COLLEGE ON BASIS
OF ORGANIC RELATIONSHIPS

The forty-eight land-grant colleges* of continental United States may be classified on the basis of their organic connection with other educational institutions as follows:

Nineteen (Oregon, Arkansas, California, Florida, Idaho, Illinois, Kentucky, Louisiana, Maine, Minnesota, Missouri, Nebraska, Nevada, Ohio, Tennessee, Vermont, West Virginia, Wisconsin, and Wyoming) are connected with state universities.

Three (Delaware, New Jersey, and New York) are connected with other colleges or universities.

Twenty-five (Alabama, Colorado, Connecticut, Georgia, Indiana, Iowa, Kansas, Maryland, Michigan, Mississippi, Montana, New Hampshire, New Mexico, North Carolina, North Dakota, Oklahoma, Oregon, Pennsylvania, Rhode Island, South Carolina, South Dakota, Texas, Utah, Virginia, and Washington) are separate colleges of agriculture and mechanic arts.

One (Massachusetts) is a separate college of agriculture, with the mechanic arts in another institution. (United States Bureau of Education Bulletin, 1918, No. 13.)

THE EVOLUTION OF TEACHER TRAINING IN THE LAND-
GRANT COLLEGES

The evolution of the participation of the land-grant colleges in the preparation of teachers may be shown by the following significant facts related chronologically:**

1902.—North Dakota added a two-year course in nature study.

1903.—North Carolina established for rural teachers a two-year course, a one-year course, and a summer course, and for city teachers, a two-year course, a one-year course, and a summer course. The states of Connecticut, Nebraska, Tennessee, California, and Missouri offered summer-school work in agriculture for teachers. (A. C. True, Annual Report, Office of Experiment Stations, United States Department of Agriculture, 1903.)

*Whites.

**As this study deals with only the land-grant colleges for whites located in continental United States, and as every state has one such college, and only one, the official names of the various institutions will not be used, but only the name of the state, it being understood that the facts stated apply to the land-grant institution of that state. A list of the land-grant colleges, with the latest official name of each, can be found in the most recent annual report of the United States Bureau of Education.

1905.—Connecticut offered a two-year course for rural teachers.

1906.—Departments of education were established in Louisiana and in Maine. Massachusetts made an appropriation of \$5,000 for normal work. There were departments of education in Georgia, California, Minnesota, Nebraska, Tennessee, and Wisconsin. Departments of education which give special attention to training special teachers of agriculture were started in Illinois, Missouri, and Washington. Normal courses featuring agriculture were announced in the catalogs of Arkansas, Iowa, Kansas, and Mississippi; two-year normal courses are offered by Colorado, New York, North Dakota, and Oklahoma, and a three-year normal course in South Dakota. Summer schools were maintained in Georgia, Illinois, Kentucky, Maine, Mississippi, New York, Ohio, Utah, Washington, and Wisconsin, and a correspondence course for teachers in North Dakota. Kentucky provides by law for recognition of Bachelor of Pedagogy and certificates issued by the normal department as licenses to teach in the public schools. (United States Bureau of Education Report, 1906, Vol. I, p. 569.)

The legislature of Ohio enacted a law that the State University shall never maintain a normal school, but may establish a teachers' college of professional grade.

1907.—Agriculture was taught in every state, territory, and outlying possession in the United States except Alaska and Arizona. Of the sixty-seven state agricultural colleges, twenty-six were providing teachers' courses in agriculture. (Dick J. Crosby, United States Department of Agriculture, 1907.) Agriculture is rated with other scientific and technical subjects as a suitable major for the doctorate in philosophy, not only in large universities like Cornell (New York) and Wisconsin, where agriculture is regularly taught in undergraduate courses, but in such universities as Clark and Columbia. (Dick J. Crosby, Report of Office of Experiment Stations, United States Department of Agriculture, 1907, p. 237.) Illinois, Maine, and Missouri offer courses for persons who intend to teach agriculture.

The State Superintendent of Public Instruction of Michigan was authorized by law to determine, with the advice and consent of the president of the Michigan Agricultural College, the qualifications of teachers to be employed in county schools of agriculture, manual training, and domestic economy. New York offered a two-year normal course in nature study. In North Dakota, in order to admit more

agriculture and mechanic arts instruction, the two-year teachers' course was extended to three years. Rhode Island modifies her four-year college courses in pure science into a teachers' course extending through four years and leading to the Bachelor's degree. It is intended to prepare persons to teach the sciences that pertain to agriculture and the mechanic arts. (United States Bureau of Education Report, 1907, Vol. II., pp. 869 to 891.)

1908.—Arkansas offered a normal course for public-school teachers, and Delaware made an effort to carry out the provisions of the Nelson Amendment. Louisiana established a four-year college course for teachers, the student being allowed to elect courses in agriculture. Michigan created a department of agricultural education, with courses including general agricultural education, agricultural education as applied to high schools and to rural schools. The legislature in Oklahoma created in the land-grant college the "Chair of Agriculture for Schools," and provided that graduates from the four-year course of the college shall be granted a permanent teachers' certificate of first grade when approved by the state commissioner of agriculture and industrial education, the president of the state board of agriculture, and the president of the college. (United States Bureau of Education Report, 1908, Vol. II, pp. 741-45.) New Jersey by law provided for summer courses in teaching agriculture, and that certificates of graduation from such courses as are prescribed by the state board of education shall be valid licenses in the public schools for the subjects covered by the certificate, provided the holder has another valid certificate to teach in public schools. Minnesota offered a summer school for teachers who intended to teach or supervise agriculture. North Dakota organized education courses of college grade to prepare their graduates to teach agriculture, science, domestic science, and manual training. Tennessee established a department of agricultural education, chose an assistant professor of agricultural education, and provided courses to prepare persons for teaching agriculture and the applied sciences. Wisconsin established a special course to train those who are to teach and supervise agriculture. Washington offered a two-hour course in methods of teaching agriculture. (United States Bureau of Education Report, 1908, Vol. I, pp. 80, 81.) North Carolina conducted a one-month course for teachers. (United States Bureau of Education Report, 1908, Vol. II, p. 741.) In Massachusetts courses for the training of teachers were offered in 1907-8. (W. R. Hart, in questionnaire to G. M. Wilson.) At the end of the fiscal

year 1907-8 agricultural colleges were in operation in all the states and territories excepting Alaska. (Dick J. Crosby, in Report of Office of Experiment Stations, United States Department of Agriculture, 1908, p. 255.)

1909.—Minnesota established a two-year course in industrial and agricultural education to prepare teachers for the new agricultural high schools established by the legislature. A department of education was established in North Dakota in fulfillment of the Nelson Amendment. Vermont established a department of teaching. Many colleges issued exercises, courses of study, and bulletins of instructions. (Report of Experiment Stations, United States Department of Agriculture, 1909.) Oregon offered agricultural education in a newly established department of industrial education. (H. P. Barrows' letter, September 4, 1918.)

1910.—Idaho established a specialized four-year course in agricultural education. (United States Bureau of Education Report, 1910, Vol. II, p. 985.) Oklahoma offered teachers' training courses. (J. H. Bowers, in questionnaire to G. M. Wilson.) Michigan opened a one-year course in agricultural education to graduates of other colleges and to teachers holding life certificates. (United States Bureau of Education Report, 1910, Vol. I, p. 256.) Alabama appointed a professor of agricultural school work. At least forty-six of the land-grant colleges maintained teachers' training courses in agriculture, twenty-two offered four-year courses, three offered three-year courses, six offered two-year courses, five offered one-year courses, twenty-nine offered summer schools of agriculture for teachers, and six conducted correspondence courses. (Report, Office of Experiment Stations, United States Department of Agriculture, 1910.) Representatives of the land-grant colleges who were engaged in preparing teachers organized the American Association for the Advancement of Agricultural Teaching, which has since devoted itself to its manifest purpose. (Report, Office of Experiment Station, United States Department of Agriculture, 1911, p. 305.) "Even the most cursory review of educational progress in 1910 is sufficient to demonstrate the world-wide extent of the movement for the promotion of agricultural education." (D. J. Crosby, in Report, Office of Experiment Station, 1910.)

1911.—Iowa established a department of agricultural education, with a full four-year special curriculum, containing courses in professional subjects. Minnesota provided a six-weeks' course equivalent to a semester's work in col-

lege credits for the special assistance of those desiring to teach agriculture. In Mississippi a school of industrial education was established to prepare teachers of agriculture and manual training, with the preparatory department as a school for practice teaching. Nebraska established a secondary school of agriculture in connection with the land-grant college. The Ohio Legislature authorized the establishment of a high school to be located on the campus of the university and used as an observation and practice school by the university. A department of education to offer courses in agricultural pedagogy and methods of teaching was provided. (United States Bureau of Education Report, 1911, Vol. II, pp. 997-1013.)

"There is no longer any question as to the demand for instruction in agriculture in colleges, normal schools, high schools, and elementary schools. We read it in the educational journals, the magazines, and the daily papers; we hear of it at conventions, on railway trains, and in street cars; and we find all these agencies actually engaged in promoting agricultural education." (Report, Office Experiment Stations, United States Department of Agriculture, 1911, p. 277.)

The departments of agricultural education in many cases are giving special aid to instructors in public schools teaching agriculture, and are also giving special instruction in agricultural pedagogy and agriculture for teachers in summer schools. (United States Bureau of Education Report, 1911, Vol. I, p. 361.)

Of fifty (white) land-grant colleges, only twelve give no special courses for students preparing to teach, although many of their graduates become instructors in agriculture in secondary schools, with only such preparation as their general college courses and technical agricultural courses. Three of the twelve offer summer-school courses in agriculture for elementary teachers; thirteen had a department (or school) of education when the Nelson Amendment was passed allowing students in agricultural courses to elect certain courses in education; ten others have added courses in psychology and general education, and thirteen have added departments of agricultural education, which give courses in methods of teaching agriculture and in school agriculture as well as in general pedagogy; nine offer special one or two-year courses for teachers of agriculture, and thirty offer courses in agriculture for elementary teachers in summer schools; thirty-six offer special opportunity for students to fit for teaching agriculture, the mechanic arts, or domestic science; twelve offer courses in general education,

elective to all students; fourteen offer courses in general education and special courses in agricultural education; seven allow students in the department of education to elect courses in agriculture; two offer courses in elementary agriculture in the school of education distinct from courses in agriculture in the college of agriculture; nine offer prescribed four-year courses for special teachers of agriculture; three offer one-year courses in agriculture to graduates of approved colleges or normal schools; two offer two-year courses in nature study and agriculture for teachers; thirty conduct summer schools which offer courses in agriculture primarily for public-school teachers. (United States Bureau of Education Report, 1911, Vol. II, p. 991.)

The United States Commissioner of Education has made the following rulings (and they have been approved by the Department of the Interior) regarding the Second Morrill Act (No. 12, Statute L., p. 417, 1890) and the Nelson Amendment (No. 26, Statute L., p. 1281, 1907)—viz.:

Rule 7. "No part of the funds received under the provisions of the Acts of 1890 and 1907 may be used for any form of extension work, and all instruction must be given at the institution receiving these funds, except that a reasonable portion of the funds provided by Act of 1907 may be used for the instruction of teachers of agriculture, mechanic arts, and domestic science at summer schools, teachers' institutes, and by correspondence, and in supervising and directing work in these subjects in the high schools."

Rule 8. "All or a part of the funds provided by the Act of March 4, 1907, may be used for providing courses for the special preparation of instructors for teaching the elements of agriculture and the mechanic arts. It is held that this language authorizes expenditures for instruction in the history of agriculture and industrial education, in methods of teaching agriculture, the mechanic arts, and home economics, also for special aid and supervision given to teachers actually engaged in teaching agriculture, mechanic arts, and home economics in public schools. It does not authorize expenditure for general courses in pedagogy, psychology, history of education, and methods of teaching." (United States Bureau of Education Report, 1911, Vol. II, p. 973.)

1912.—Indiana opened a summer school for teachers, offering instruction in agriculture. In Minnesota the three-year course in the school of agriculture (secondary grade) was increased to five years, and included normal work in the fourth and fifth years, with special reference to rural school teaching. (United States Bureau of Education Re-

port, 1912, Vol. I, p. 265-6.) Minnesota established a division of agricultural education, with a full four-year curriculum, containing professional courses in agricultural education to go into active operation in 1913. (United States Bureau of Education Report, 1913, Vol. II, p. 272.) "From the best available sources of information it appears that forty of the agricultural colleges are offering courses designed to train high-school teachers of agriculture, fifteen of which have four-year courses (curricula) for teachers of agriculture." (Circular 118, Office of Experiment Stations, United States Department of Agriculture.)

"The activities in agricultural and mechanical colleges in the reorganization of their work for the preparation of teachers of agriculture, mechanic arts, and household economy, which has been marked during the past few years, is still prominent. Ten institutions report 120 students taking special courses of from one to four years arranged for the special preparation of teachers of agriculture. More than three-fourths offer some special opportunities for teaching agriculture, mechanic arts, and domestic science. Many teachers take advantage of the various short courses in agriculture, including summer schools, to supplement their training and experience." (United States Bureau of Education Report, 1912, Vol. II, p. 329.)

1913.—Kansas established a secondary school of agriculture in connection with the college, and will use it as a model school in the teachers' training courses. Vermont established a department of agricultural education and planned a four-year teachers' training course with secondary practice schools. (Report of Commissioner of Education, 1913, p. 312.) Mississippi established a practice school in vocational education in connection with the school of industrial education. (United States Bureau of Education Report, 1913, Vol. II, p. 272.)

The committee on instruction of the Association of American Agricultural Colleges and Experiment Stations recommended that "teachers of agriculture in secondary schools should not have less than twenty semester hours of professional training, including instruction in educational psychology, history of education, pedagogy, and special methods applicable to agriculture in the secondary schools, supplemented by practice teaching." (United States Bureau of Education Report, 1913, Vol. I, p. 227.)

1914.—"The call for graduates of the agricultural colleges as teachers of agriculture in secondary schools is due in part to the increasing number of public and private high schools including agriculture in their curricula, but more

to the rapidly growing demand that the agriculture taught by these institutions shall be of a vocational character." (United States Bureau of Education Report, 1914, p. 294.)

New York introduced teacher training in the colleges of agriculture. (G. A. Works' questionnaire to G. M. Wilson.) The Smith-Lever Act was passed by Congress, May 8, 1914, and within a very short time was accepted by all the states, thereby again uniting the federal government and land-grant colleges in the enterprise of promoting a knowledge of agriculture among the people—this time among those who cannot come to the college campus to pursue their study.

The following states accepted the provisions of the Smith-Lever Act and named their land-grant colleges to administer its provisions—viz.: Georgia, Louisiana, Maryland, Massachusetts. (United States Bureau of Education Report, 1914, Vol. II.) The other states accepted later. Maryland established a course in agricultural education for teachers. Texas added a department of agricultural education. Washington provided a two-year course for teachers of agriculture and manual training.

1915.—Alabama established a department of education, and Arizona one of psychology and philosophy. Missouri arranged a two-year curriculum in agriculture and in four other subjects. A course in education was provided. Rhode Island established a two-year course in agriculture.

1916.—The passage by Congress of the Smith-Hughes Act, July 31, 1916, and its prompt acceptance by all the states (Second Annual Report, Federal Board, Secondary Education) has given an impetus to teacher training that will appear more clearly in the facts set forth in subsequent chapters.

The Federal Board for Vocational Education, which has the approval of institutions in the several states selected to prepare special teachers of agriculture for employment in Smith-Hughes vocational secondary high schools, has, on the recommendation of the boards for vocational education of the several states, approved such teacher-training institutions as follows:

In forty-five of the forty-eight states the land-grant institution is designated as the exclusive institution for the preparation of special teachers of agriculture; in one state the land-grant college is named, with two state normal schools coöperating; in one the final decision will probably be to name the land-grant college and one normal school; while in one the state university, which has a coöperative working plan with the land-grant college, is named.

From the preceding facts it seems safe to draw the following specific conclusions—viz.:

First. The land-grant colleges are advantageously distributed over the United States.

Second. They have been endowed generously by the states and the federal government jointly.

Third. The federal government and the states have joined in their administration.

Fourth. They are possessed of faculties of specialists in agriculture for investigating and teaching.

Fifth. Each college has one or more agricultural experiment stations, the procedure and results of which are available to students and faculty.

Sixth. The special equipment, including such things as lands and live stock, so necessary to the proper teaching of agriculture, represent a very large investment at each institution and in total.

Seventh. Their organic connection with universities or with schools of science strengthens their work in other fields than technical agriculture.

Eighth. The gradual growth within them of work in professional education has given opportunity to evolve successful coördination between the student's work in technical agriculture and his work in professional education.

Ninth. The men more responsible than any others in the United States for properly determining the institutions that shall be approved for preparing special teachers of agriculture, the members of the Federal Board for Vocational Education, have chosen the land-grant colleges almost universally to perform that important function.

To the foregoing conclusions may be added the statement of a condition familiar to all persons well acquainted with American educational institutions—viz., that no other class of institutions of education in America fulfill the conditions mentioned in any one (save the first) of the nine conclusions applied above to the land-grant colleges.

The question asked at the beginning of the chapter regarding the fitness of the land-grant colleges to prepare teachers of agriculture can now be answered by the general conclusion that the land-grant colleges of the United States are proper places in which to prepare special teachers of agriculture so far as that can be determined by the history of their origin and evolution.

CHAPTER II

THE ADMINISTRATION OF THE TRAINING OF SPECIAL TEACHERS OF AGRICULTURE IN THE LAND- GRANT COLLEGES

Section 1. Facts regarding separate departments, titles, college, head relation to president, control over curriculum, and recommendation of students.

Section 2. Interpretation of the facts found in Section 1.

Section 3. Conclusions derived from Sections 1 and 2.

SECTION 1.—FACTS

In Chapter I is evidence of a rapidly growing interest in the teacher-training work of the land-grant colleges, particularly since the beginning of the twentieth century.

The official report of the United States Commissioner of Education for 1910 (Vol. I, p. 256) shows the following dates of establishment of departments of agricultural education (agricultural pedagogy, industrial education, rural education, or similar title) in some of the land-grant colleges: 1904, Mississippi; 1905, Illinois; 1907, Massachusetts; 1908, Indiana, Michigan, North Dakota, Tennessee; 1909, Alabama, Arkansas, Colorado, Idaho, Louisiana, Missouri, Nebraska, Oklahoma, Oregon, Wisconsin.

Other states were added to the list from year to year, the final influence which caused the remaining states to prepare for teacher training being the passage of the Smith-Hughes Act of 1917. (See Chapter I.)

The Federal Board for Vocational Education and its director created by this Act required that each state submit plans for teacher training in the institution designated for that purpose. Upon the approval of these plans and their satisfactory execution depended the payment to the state of the federal moneys for teacher training.

Based upon these plans, the land-grant colleges have been designated as the sole institution for the training of special teachers of agriculture under the federal Smith-Hughes Act, save one, where two state normal schools and the land-grant institution are designated jointly; one in which the state university, which has a coöperative arrangement with the agricultural college for the training of agricultural teachers, is designated; and one in which final action is pending, with the possibility of the land-grant university and one normal school being jointly designated.

These actions of state boards, approved by the Federal Board for Vocational Education, have practically deter-

mined that the land-grant colleges shall be the only institutions that as a class shall be set apart as the institutions wherein the special teachers of agriculture shall be trained. To study their adaptation to this work and the degree to which the plans they have established give promise of success is the purpose of the remaining chapters.

It may be assumed to be common knowledge that there has been for some time a very rapidly growing interest on the part of many people in the spread of knowledge of agriculture, and also in the teaching of the subject in the public schools. It may also be assumed to be common knowledge among those engaged in the professional training of teachers that the faculties of practically all colleges (excepting teachers' colleges) and their administrative officers attached little importance to the necessity for the professional training of the teacher. These "gentlemen of the old school" rested satisfied in the dogmatic statement that "if you know the subject-matter you can teach it."

Not only to discover the evolution of sentiment on the part of such persons, but, what is of far greater importance, to learn whether or not the professional preparation of agricultural teachers in the land-grant colleges is recognized as being sufficiently important to warrant its being classed with the major administrative as well as subject-matter divisions of the work of these institutions, and is, therefore, to be given an opportunity to develop with sufficient rapidity and freedom to be able to bear the heavy responsibilities which the future seems destined to place upon it, eleven questions were included in the questionnaire (see Appendix A) regarding the administrative relationship of agricultural education within the land-grant institutions. The answers to these questions furnish the facts for this chapter.

WHERE THE ADMINISTRATION IS ORGANIZED AND WHO ADMINISTERS

Department Separate or Not.—The extent to which agricultural education (the preparation of special teachers of agriculture) is organized as a separate department is shown by the replies to the questionnaire which are included in Table 1.

Table 1—Is Agricultural Education Organized as a Separate Department? (Appendix B, Table A1.)

<i>Answers</i>	<i>Institutions</i>
Yes	37
No	7
Not replying	4

Separate Departments.—Of those organized as separate departments, nineteen are in separate land-grant colleges and seventeen in colleges connected with universities. (Appendix B, Table A1.) Of the separate departments, the titles vary somewhat, as shown by Table 2.

Table 2—*Titles of Departments and Number of Each.* (Appendix B, Table A1.)

<i>Titles</i>	<i>Number of Institutions Using</i>
Agricultural education -----	27
Vocational education -----	5
Rural education -----	1
Rural and industrial education -----	1
Rural life -----	1

Of these departments, the number of institutions in which they are organized in certain colleges is shown in Table 3.

Table 3—*Colleges Within which Separate Departments for Training Teachers of Agriculture are Organized and the Number of Land-Grant Institutions in which They are so Organized.* (Appendix B, Table A1.)

<i>Name of College</i>	<i>Number of Institutions</i>
In college of agriculture -----	24
In college of education -----	5
In colleges of agriculture and education jointly--	3
In college of arts and sciences-----	2
Independent -----	2

Of the twenty-four that are departments in the college of agriculture, twelve are in separate colleges of agriculture, while twelve are in institutions connected with universities.

Departments Not Separate.—Of the seven institutions in which the agricultural education is not a separate department, four are in separate colleges, while three are in universities.

Another feature of organization of value in determining the administrative status of the departments for the training of teachers in the land-grant institutions is the degree of nearness or remoteness of the head of this department in relation to the president of the institution. Whether he is first or second in a direct line below the president is shown by Table 4. (Appendix B, Table A1.)

Table 4—*Remoteness of Head of Department in Direct Line of Administration from President.*

	<i>Number of Institutions</i>
First (immediately responsible to president) ----	7
Second (one administrative position between) ---	29
No data -----	12

In five of the twenty-nine cases there are two coördinate deans between the man directly responsible for training of the agricultural teachers and the president; but as they act jointly, and not in line, the man in charge of the teacher training is said to be administratively second from the president.

Of the seven that are not separate departments, but constitute a part of some department other than agricultural education, all are within departments of education, although one states that it may be placed in the college of agriculture. There it may become a separate department. In these seven the titles of the persons in direct charge of the work are all educational titles, no instance being found in which these nonseparate departments are under the direct administration of subject-matter members of the faculty, the other duties of those responsible for the administration being entirely in the field of professional education.

The degree of remoteness of the person in direct charge of the agricultural education in these nonseparate departments corresponds with those of the separate departments in that, of the four reporting, three are second and one first in order from the president, thus maintaining about the same general ratio.

ADMINISTRATION OF THE CURRICULUM

Approval of Specified Required Curriculum.—In the administration of the curriculum required of the special teachers of agriculture the approval of the curriculum is authorized as shown in Table 5.

Table 5—Who Approves the Curriculum.

<i>Persons</i>	<i>Number of Institutions</i>
Authorities within college of agriculture-----	20
Authorities within college of education-----	2
Authorities within colleges of agriculture and education jointly---	7
Miscellaneous, distributed as follows:	
Agriculture participating -----	4
Education participating -----	2
Indefinite or uncertain -----	7

Approval of Change.—Almost as great a variety is found in the location of authority for the approval of any change from the prescribed curriculum, and these data are summarized in Table 6.

Table 6—Who Approves Change in Curriculum for a Student.

<i>Replies Received</i>	<i>Number of Institutions</i>
Requiring the approval of head of agricultural education-----	25
“ “ “ “ dean or director -----	16
“ “ “ “ committee -----	4
“ “ “ “ faculty -----	1
“ “ “ “ agricultural college authorities only----	22
“ “ “ “ education college authorities only----	3
“ “ “ “ college of agriculture and education jointly -----	5

CHOICE OF CURRICULUM BY HEAD OF TEACHER TRAINING

The question of whether the administrator of the educational work is the one who chooses the other courses that constitute the curriculum for the prospective teachers of agriculture is significant, as shown in Table 7.

Table 7—Does the Educational Administrator Choose the Curriculum?

<i>Answer</i>	<i>Number of Institutions</i>
Yes -----	33
Yes, jointly with another or others-----	3
No -----	5
Not replying -----	7

Approval of Preparation of Prospective Teacher.—To the question, “Who approves finally for the institution the preparation of the student as sufficient and proper for the special teaching of agriculture (not merely for graduation)?” the replies indicate a variety of authorities, as will be seen by consulting Table 8.

Table 8—Who Approves the Preparation of the Student.

<i>Those Who Approve</i>	<i>Number of Institutions</i>
Director of school of agricultural education-----	1
Professor of agricultural education -----	8
Head of department of agricultural education-----	8
Head of department of vocational education-----	1
Instructor in special methods of rural education-----	1
Department of agricultural education-----	3
Department of vocational education-----	1
Professor of agricultural education and dean of college of agriculture -----	2
Professor of agricultural education and dean of science-----	1
Head of department of agricultural education and dean of education -----	1
Dean of college of agriculture-----	1
Head of department of education -----	1
Miscellaneous combinations -----	7
No reply -----	12

The replies may be condensed into three groups, representing, respectively: Group One, those who constitute or are a part of the special department for preparing special teachers of agriculture; Group Two, an officer of the department of agricultural education plus a dean; Group Three, other combinations in which the representative of agriculture may or may not be included, but which includes other officers, committees, or faculties. The number of institutions in these three groups is shown in Table 9.

Table 9—Condensation of Table 8.

<i>Groups</i>	<i>Number of Institutions</i>
One -----	23
Two -----	4
Three -----	9

SECTION 2.—INTERPRETATION OF THE FACTS SHOWN IN SECTION 1.

The facts shown in the tables give great encouragement for believing that those responsible for the establishing of the preparation of special teachers of agriculture as a part of the work of the land-grant colleges have come to recognize two important truths—i. e., that special preparation on the part of those who are to teach is necessary in the purposes, principles, and procedure of the teaching processes, with special reference to the character of subject-matter and constituency of the teaching of agriculture in the elementary and secondary schools, and also that, to bear successfully its great and rapidly accumulating responsibilities, the department for the preparation of special teachers of agriculture should have the dignity and influence which arise from occupying a position of administrative equality with such subject-matter units as agronomy and animal husbandry in the colleges of agriculture and as mathematics and history in academic colleges. More convincing evidences could scarcely be found than appear in these tables.

Table 1—Is There a Separate Department? Though there may be some uncertainty as to what constitutes a "separate department," the replies to the questionnaire, corroborated by catalogs, made the determination fairly accurate. If any error has been made, it has been in assigning to the nonseparate group certain institutions which for all practical purposes have separate departments, but which, because of local conditions that may have existed at the time of establishing this work, became incorporated within another department. It is significant that of the entire seven said-to-be nonseparate departments, six of them are parts of schools or departments of education and one of educa-

tion and agriculture jointly. (Appendix B, Table A2.) Of the six, three are in separate land-grant colleges, and are likely to exercise a great deal of influence in determining the policies to be followed in preparing special teachers of agriculture.

In one or two other instances wherein the department is separate from all subject-matter departments and departments of general education, but includes the pedagogical training for some other class of educational teachers, such as home economics, it has been classed as separate, since it has the same administrative dignity, responsibility, and freedom as do the separate departments. With this fair assignment, 84 per cent of those furnishing information show separate departments. These are almost equally divided between the colleges that are separate institutions and those connected with universities, which is about the same relation the numbers of these institutions bear to each other. This same relation of numbers seems to prevail in regard to the departments that are nonseparate.

Table 2—Titles. With all the possibilities that existed of combining this work with that of the various subjects already prominent in the colleges and universities, it is significant that 77 per cent of these separate departments adopted the title "Agricultural Education." So far as any evidence appears, this has been done wholly without the influence of conferences, committees, or the activities of an organization of any kind. With good judgment and discrimination, deans, presidents, and governing boards in naming these departments evidently recognized and desired to emphasize the two fundamental characteristics of the field of activity—agriculture and education properly united.

The naming of some of the departments called "Vocational Education" was, doubtless, promoted by the necessity of including in the department some pedagogical work for home economic teachers, while the name "Rural Life" was used by one institution to designate the department responsible for the training of special teachers of agriculture, because the name "Agricultural Education" had already been appropriated by the institutions for another purpose. (Catalogs.)

The names of these departments seem to indicate the recognition on the part of the land-grant (agricultural) institutions of their responsibility for the preparation of special teachers of agriculture.

Table 3—In What College? This table discloses that 65 per cent of the land-grant institutions maintaining separate departments for the preparation of special teachers of agri-

culture recognize the paramount importance of the college of agriculture in this work by organizing the department as an integral part of that college, while 8 per cent more unite the work in the colleges of agriculture and education, giving 73 per cent that recognize the necessity of the active participation of a federal land-grant agricultural college in the administration of the preparation of special teachers of agriculture.

Of the remaining 27 per cent, approximately 8 per cent are in universities with colleges of agriculture as a part of their organization and 19 per cent are in separate colleges of agriculture, practically all of them administratively connected with some other division of the college of agriculture than its purely agricultural subject-matter division. This shows that about 90 per cent of these separate departments are organized within the specifically agricultural portions of the land-grant colleges or within administrative units that are themselves a part of the organization of separate land-grant colleges of agriculture. (Appendix B, Table A1, and catalogs.)

And all of this must be considered in the light of the fact that practically half of the institutions are institutions that are organized as universities, and, as such, doubtless have colleges or schools of arts and sciences, and also of education, in which these departments of agricultural education could have been organized had there not been a special desire to place them in the colleges of agriculture.

If evidence were needed that those responsible for establishing the work of training special teachers of agriculture believe in the necessity for the paramountcy of a college of agriculture in that training, it is to be found here.

Table 4—Nearness to President. The relatively important administrative position of the department for the preparation of special teachers of agriculture is depicted clearly in this table, which shows that of the thirty-six institutions reporting, seven (over 19 per cent) of the heads of the teacher-training departments are immediately responsible to the president, while twenty-nine (about 81 per cent) have only one administrative officer (usually a dean) between him and the president. (Appendix B, Table A1.) This places the head of this department on an equality in one group with deans, and in the others with heads of the important subject-matter departments, such as animal husbandry and agronomy. To one familiar with the red tape of institutional procedure and the influence of administrative nearness to the final authorities, the importance of this in attracting students of good quality and in sufficient num-

bers, in obtaining for them the opportunities they need for proper preparation, and in gaining from the public, especially the educational public, a proper recognition of the importance of agricultural education, will be at once apparent.

Tables 5, 6, 7—Control of Curriculum and Recommendation for Completion. Assuming satisfactory native ability, each institution should see that the prospective special teachers of agriculture are properly equipped in these particulars—viz.: Practical agricultural experience, scientific agricultural knowledge, appropriately distributed over the fields of agriculture which they will be called upon to teach, practical teaching experience, and scientific knowledge of education, with special reference to their prospective subject-matter and constituency, both agricultural and educational.

To even approximate the accomplishing of this in the four-year college curriculum requires a knowledge of conditions, a judgment of values, and a power of impartial discrimination possessed by few.

If the determination of the general procedure and special variations therefrom were to be left to the specialists in agricultural subject-matter, the student's preparation in the science and art of education would be likely to suffer; and if left to the conventional educationist, his science and art of agriculture (and possibly, also, his art of education) would be likely to suffer. The man to make these niceties of arrangements and readjustments should be one with a practical knowledge of farms and schools and a scientific knowledge of agriculture and teaching, who is familiar with the demands to be made upon the special teacher of agriculture in the present and in the immediate future. This the man or men in this new department for the preparation of special teachers of agriculture is rapidly approximating. How near he has come to the goal will be shown later.

Assuming that he is as near to it as the unfortunate discrepancy between supply and demand permits, the only safe plan is to give him large voice in choosing the curriculum of this prospective special teacher of agriculture, in approving variations therefrom, and also in the final approval for the institution of the fitness of the student to become a special teacher of agriculture. Table 7 shows that of forty-one institutions maintaining a specified curriculum for the prospective special teacher of agriculture, the man in charge of agricultural education chooses its contents in 80 per cent of the colleges and jointly with others in 7 per

cent more. Of the remaining 12 per cent (minor fractions make 1 per cent) replying in the negative, "faculty of the division of agriculture and general faculty;" "dean of agriculture;" "president, dean of agriculture, and dean of general science;" "dean of college;" "faculty of agricultural college," are authorities named as those who choose it.

From personal knowledge of the writer obtained on visits to some of these institutions, he is quite sure that the answer was intended to show the nominal authority, while the real authority is in the man in charge of the training of the teachers. Even granting no weight to these assumptions, the heavy predominance of direct evidence shows that the authorities of the land-grant colleges have placed this power of choice largely within the authority of the men in charge of the professional preparation of special teachers of agriculture, and that in many instances where it is not solely under his choice the joint authority is so close to him that it is fair to presume that even in these institutions he will be able to obtain for his students a distribution of subject-matter well adapted to their needs, subject only to the offerings of the institution, and that land-grant colleges, because of this, are favorably conditioned so far as choosing a curriculum for the preparation of special teachers of agriculture is concerned.

The facts in Table 5 again emphasize the great importance of the college of agriculture in the approval of the curriculum of the prospective special teacher. Of the thirty-five classifiable replies, the college of agriculture solely approves in 57 per cent, unites with the college of education in 20 per cent more, and with others in 11 per cent more, making 88 per cent in which the college of agriculture authorities participate. The college of education solely approves in slightly less than 6 per cent, jointly with agriculture in 20 per cent more, and with others in slightly less than 6 per cent more, making 31 per cent in which the college of education participates to any degree. These per cents strongly sustain the previous evidence of the importance which the authorities governing the land-grant institutions accord to the college of agriculture in the proper preparation of special teachers of agriculture.

In Table 6 we find a reinforcement of the conclusions drawn from Tables 5 and 7. These facts reinforce Table 5 by showing that any variation from the specified curriculum for the prospective special teacher of agriculture must be approved solely by the college of agriculture authorities in 73 per cent and jointly with the college of education in 17 per cent, making a total of 90 per cent partici-

pated in by the college of agriculture, as against the college of education solely, 10 per cent, and jointly with the college of agriculture, 17 per cent, or a total of 27 per cent participated in by the college of education.

The facts in Table 6 reinforce Table 7 by showing that in thirty-eight replies the authorities of the head of the department having in charge the preparation of special teaching of agriculture is required 66 per cent of the times, against 42 per cent for the dean or director (18 per cent being instances in which the head joins with the dean or director) and 11 per cent for a committee (51½ per cent being instances in which the head joins with the committee).

Tables 8 and 9—Approval of Preparation. There is some possibility that those who replied did not interpret this question alike, some thinking in terms of final authority and some in terms of initial authority; but the presence of the word "finally" in the question would have a tendency to cause those answering to ignore the head of teacher training and name the authority that last passes upon student preparedness rather than upon the initial authority whose recommendation subsequent approving authorities accept and indorse on faith. Even with this large probability of error against the number of institutions in which the head of the teacher training recommends the student, the facts in Table 8 show plainly that in 64 per cent of the institutions replying this final approval of the sufficiency and character of the preparation of the prospective teacher of agriculture lies solely with persons specifically in charge of the preparation of special teachers of agriculture, while in 11 per cent more he unites with a dean, bringing 75 per cent of these cases under his immediate approval.

Though there is no data upon the point, a knowledge of college and university procedure would lead one to venture the assertion that no candidate would be recommended as properly prepared as a special teacher of agriculture against the expressed disapproval of the man in charge of the preparation of special teachers of agriculture.

Further evidence of the recognition of the importance of the department of agricultural education in the proper preparation of special teachers of agriculture is seen in the fact that of the twenty-seven definite combinations of authority for approval of the candidate found in Table 9, it is shown that 64 per cent of the institutions place this solely with a person in agricultural education, while 75 per cent place it with him alone or with him plus a dean.

From this evidence, so recent and so direct, it is apparent that those responsible for determining the place agricultural education—i. e., the preparation of special teachers of agriculture—is to occupy in the administrative organization of the land-grant institutions place a high value on the work to be done and recognize the desirability of making its administrative position of sufficient dignity, authority, and responsibility to enable it to perform its duty with both immediate and ultimate success. This is discernible in the action of most of the colleges in making it a separate department coördinate with other subject-matter departments directly under either the president or a dean, and in giving to those responsible for teacher training the largest share in determining this curriculum and directing the preparation of the student therein and approving the sufficiency and character of his preparation when he has finished.

This evidence makes more certain the statement that the administration of the preparation of special teachers of agriculture in the land-grant colleges is on a basis that warrants the expectation of future success so far as good administrative organization is a factor in such success.

SECTION 3.—SUMMARY OF CONCLUSIONS

The facts in Section 1 and their interpretation in Section 2 seem to warrant the following conclusions:

1. The land-grant institutions favor the organization of the work of preparing special teachers of agriculture in a separate department.

2. The land-grant institutions favor naming the department that is to prepare special teachers of agriculture "agricultural education."

3. The land-grant institutions favor the department of agricultural education being organized as a part of the college of agriculture.

4. The land-grant institutions favor the department of agricultural education occupying a position coördinate in rank with the most important departments of the institutions.

5. The land-grant institutions favor placing in the man or men of the department of agricultural education the authority for choosing the four-year curriculum for the special teachers of agriculture, its variation, and the approval of the student as properly prepared.

6. By their administrative organization of the work of preparing special teachers of agriculture the authorities of the land-grant institutions seem to appreciate the great

responsibility resting on those institutions for the preparation of such teachers.

7. The authorities of the land-grant institutions seem to appreciate the desirability of placing the departments having charge of the preparation of special teachers of agriculture upon a sufficiently high administrative plane to enable them to function successfully.

8. The land-grant institutions seem to recognize the superiority of the college of agriculture over all other colleges for the administration of the preparation of special teachers of agriculture.

9. The land-grant institutions seem to appreciate the wisdom of granting departments organized to prepare special teachers of agriculture a large amount of authority over the curriculum provided for such special teachers and the approval of students prepared therein. These lead to the final conclusion:

10. That the administration of the preparation of special teachers of agriculture in the land-grant institutions is on a basis that warrants the expectation of future success so far as administrative organization can contribute to such success.

CHAPTER III

IN WHAT COLLEGES OF THE LAND-GRANT INSTITUTIONS THE PROSPECTIVE SPECIAL TEACHER OF AGRICUL- TURE OBTAINS HIS EDUCATION AND THE QUALIFICATIONS AND RANK OF THOSE WHO TEACH HIM

Section 1. Facts showing colleges in which he studies, degrees of those who teach him agriculture and of those who teach him education; character of training and experience of those who teach him education; and professorial rank of the faculties of agricultural education and of the faculties of the institutions as wholes.

Section 2. Interpretation of the facts found in Section 1.

Section 3. Conclusions derived from Sections 1 and 2.

SECTION 1.—THE FACTS

To discover how the land-grant institutions are bearing their responsibilities in preparing these special teachers through the opportunity given the students of participating in the activities of several colleges in the institution; the extent to which the institutions have sought to make this preparation of special teachers efficient through faculties well equipped and of sufficient numbers; and also the extent to which those responsible for the establishment of departments of agricultural education in the land-grant institutions have recognized their importance by the rank accorded to the members of these faculties, a series of questions was included in the questionnaire (Appendix A, Part B, Questions 1 to 7, inclusive), upon the answers to which the facts of this chapter are principally based.

Distribution of Students' Work Among the Colleges.—Probably no other teacher to-day needs so broad, so thorough, and so diversified a preparation for his work as does the teacher of agriculture, especially the one who is to teach in the secondary schools. This will be discussed more fully in Chapter V, but is stated at this point to indicate the reason for inquiring regarding the colleges in which he is being educated and the college faculties from whom he obtains his instruction. The first question in the questionnaire elicited the facts in Table 10, which shows the number of land-grant institutions in which the students take the subjects shown at the tops of the columns in the kind of college shown at the left.

Table 10—Colleges in Which This Student Obtains His Preparation. (Subjects at top, colleges at left.)

NUMBER OF LAND-GRANT INSTITUTIONS IN WHICH THESE SUBJECTS ARE OBTAINED

Name of College	Agriculture	Education	Sciences	Other Subjects
Agriculture -----	42	11	5	4
Education -----		18		
Arts and Sciences -----		3	24	13
Agriculture and Arts jointly -----		5	5	2
Agriculture and Education jointly --		1		
Engineering -----				1
Unclassified -----		2	1	4
No reply -----	6	8	13	24

By referring to Appendix B, Table B1, it is seen that the following numbers distribute the preparation of the student over the given number of colleges as shown in Table 11.

Table 11—Distribution of Students' Work Over Colleges.

NUMBER OF COLLEGES IN SINGLE LAND-GRANT INSTITUTIONS IN WHICH THIS STUDENT TAKES INSTRUCTION	NUMBER OF LAND-GRANT INSTITUTIONS MAKING THIS DISTRIBUTION
In 5 colleges -----	1
In 4 colleges -----	5
In 3 colleges -----	15
In 2 colleges -----	12
In 1 college -----	6
No reply -----	9

Agriculture Faculty.—As the most significant features of the preparation of these special teachers are the work in technical agriculture and in education, it seemed desirable to find out the number and educational preparation of the persons from whom the prospective teachers of agriculture receive their instruction in these two important classes of subjects.

In Table 12 have been summarized the results of the questionnaire replies upon these points. (Appendix B, Tables B2 and 3.) This table shows the total number of faculty members in the college of agriculture who are engaged in teaching this student his agriculture and whose highest degrees are the Bachelor's, Master's, and Doctor's, respectively, and the number holding each of those degrees. It also shows the maximum number in any one institution, the minimum in any one institution, the average for all institutions reporting, and the number of institutions reporting.

Table 12—Total Maximum, Average, Minimum, and Number of Institutions Reporting the College of Agriculture Faculty Members Who Teach Agriculture to the Prospective Special Teachers of Agriculture, Classified by the Highest Academic Degrees Held.

NUMBER OF AGRICULTURAL FACULTY MEMBERS

	<i>Bachelor</i>	<i>Master</i>	<i>Doctor</i>	<i>Total</i>
Total -----	313	305	127	745
Maximum -----	40	40	15	
Average -----	9	8	4	21
Minimum -----	1	1	1	
Number of institutions -----	36	36	32	36

Table 13 gives the same data relating to the numbers of the faculties who teach education to the prospective special teacher of agriculture in the several land-grant institutions, classified on the basis of the highest degree held.

Table 13—Total Maximum, Average, Minimum, and Number of Institutions of Those Teaching Education.

	<i>Bachelor</i>	<i>Master</i>	<i>Doctor</i>	<i>Total</i>
Total -----	40	55	41	136
Maximum -----	3	3	4	
Average -----	1	2—	2—	4—
Minimum -----	0	0	0	
Number of institutions -----	24	36	25	36

Table 14 gives the percentages of the faculty members teaching education, and also of those members of the agriculture subject-matter faculties who teach agriculture to the prospective teachers of agriculture, classified by the highest degree each holds, the data being taken from the numbers in Tables 12 and 13.

Table 14—Percentages of Faculty Members Holding the Respective Degrees. (For more complete explanation, see above.)

<i>Faculties</i>	<i>Bachelor Per Cent</i>	<i>Master Per Cent</i>	<i>Doctor Per Cent</i>
Agriculture subject-matter -----	42	41	17
Education -----	30	40	30

Preparation of Education Faculty.—The character and amount of preparation possessed by those who are to teach the educational subjects to the prospective teacher of agriculture are extremely important, since they have so great an effect upon the success of the teacher, particularly during his early years of teaching.

The important features will be shown in three tables—Numbers 15, 16, and 17. In Table 15 is shown for each state furnishing the data the percentage to the nearest integer of the faculty members who teach educational courses to the prospective special teachers of agriculture in the land-grant institution of that state who possess the following characteristics—viz.: (a) Special collegiate preparation in education equivalent to a Bachelor's degree in education, but not collegiate preparation in agriculture; (b) special collegiate preparation in agriculture equivalent to

a Bachelor's degree in agriculture from a standard land-grant college, but not collegiate preparation in education; (c) special collegiate preparation in agriculture equivalent to a Bachelor's degree in agriculture from a standard land-grant college, and also in education equivalent to a Bachelor's degree in education; (d) reared on a farm; (e) taught in elementary or secondary schools.

Table 15—Education and Experience of Those Teaching Educational Subjects to the Prospective Special Teachers of Agriculture. (For explanation, see foregoing paragraph.)

State Reporting	Percentage Possessing Qualification				
	a Per Cent	b Per Cent	c Per Cent	d Per Cent	e Per Cent
Alabama	50	50	0	100	100
Arizona	50	50	0	0	100
Arkansas	75	0	25	50	100
California	100	0	0	100	100
Colorado	100	0	0	67	100
Connecticut	0	0	100	100	100
Florida	100	0	0	100	100
Georgia	80	60	40	80	100
Idaho	67	0	33	100	100
Illinois	100	0	0	67	100
Indiana	67	0	33	100	100
Iowa	50	0	50	100	100
Kansas	60	20	20	100	100
Kentucky	67	0	33	100	100
Louisiana	67	30	0	67	67
Maine	0	100	0	100	100
Maryland	67	0	33	100	100
Massachusetts	100	0	0	100	100
Michigan	50	0	50	100	100
Minnesota	17	0	83	67	100
Mississippi	50	0	50	100	75
Missouri	0	0	0	100	0
Nebraska	80	20	100	80	60
New Jersey	67	33	0	67	67
New Mexico	0	0	100	0	100
New York	50	0	50	75	100
North Carolina	0	0	100	100	100
North Dakota	100	0	0	0	0
Oklahoma	33	0	33	67	67
Oregon	75	0	25	75	0
Pennsylvania	43	14	43	100	71
Rhode Island	75	0	25	25	100
South Carolina	0	0	100	100	67
South Dakota	50	50	0	100	100
Tennessee	0	0	100	100	100
Texas	0	0	100	100	100
Utah	100	0	0	50	50
Vermont	67	33	0	100	100
Virginia	100	0	0	100	100
West Virginia	60	0	40	100	100
Wisconsin	50	0	50	100	67
Wyoming	50	0	50	75	100

In Table 16 is shown a grouping of these same facts within intervals of 10 per cent above zero up to and including 100 per cent.

Table 16—The Training and Experience of Members of the Educational Faculty. (a) Equivalent to Bachelor's Degree in Agriculture; (b) in Education; (c) in Both; (d) Reared on Farm; (e) Taught Elementary or Secondary School. (Appendix B, Table B3.)

<i>Per Cent of Faculty Members</i>	<i>a</i>	<i>b</i>	<i>c</i>	<i>d</i>	<i>e</i>
100-91 -----	8	1	7	25	29
90-81 -----	0	0	1	0	0
80-71 -----	5	0	0	5	2
70-61 -----	7	0	0	6	5
60-51 -----	3	0	0	0	1
50-41 -----	8	4	5	2	2
40-31 -----	1	3	7	0	0
30-21 -----	0	0	4	1	0
20-11 -----	1	3	1	0	0
10-1 -----	0	0	0	0	0
0 -----	9	31	17	3	3
Number reporting -----	42	42	42	42	42

In Table 17 is shown the maximum, average, and minimum and the mode where it is significant of the facts included in Tables 15 and 16 (forty-two institutions).

Table 17—Maximum, Average, Minimum (and Mode) of the Facts in Tables 15 and 16 (Percentages).

	<i>a</i> Per Cent	<i>b</i> Per Cent	<i>c</i> Per Cent	<i>d</i> Per Cent	<i>e</i> Per Cent
Maximum -----	100	100	100	100	100
Mode -----		0	0	100	100
Average -----	54	11	35	81	85
Minimum -----	0	0	0	0	0

PROFESSORIAL RANK

The professorial rank of those on the staff of agricultural education, like the administrative rank, is of significance as showing the degrees of recognition accorded to this field of endeavor by those responsible for establishing these new departments and the promise of efficiency in performing their duties as shown by the rank. In Table 18 a comparison is made between the percentages of faculty members of the different ranks in the departments of agricultural education, taken from the answers to the questionnaire (Appendix B1), with the percentages of the faculty members of the same rank in the land-grant institutions as a whole, taken from the most recent available catalogs of those institutions.

Table 18—Number of Faculty Members of Different Professorial Rank in Land-Grant Institutions as a Whole and in Departments of Agricultural Education. (Appendix B, Table B4, and catalogs.)

States	INSTITUTIONS AS A WHOLE					DEPARTMENT OF AGRICULTURAL EDUCATION				
	Professor	Assistant Professor	Assistant Professor	Instructor	Assistant	Professor	Associate Professor	Associate Professor	Instructor	Assistant
Alabama	31	2	7	8	17	2				
Arizona	28	5	11	7	11	1				
Arkansas	26	2	15	26	11	1				
California	30	11	37	20	7	1	1	2	1	
Colorado	20	8	8	18	13	3	6		5	
Connecticut	14		2	17		1				
Florida	28	6	3	5	7	1				
Georgia	23	12	10	6	7	2	2	1		
Idaho	34	8	11	17	4	1				
Illinois	80	8	115	127	170			1	2	
Indiana	42	15	41	54	25	1	3			
Iowa	39	38	41	91	37	1	3	1		
Kansas	32	20	42	69	32	1	2	2		
Kentucky	51	3	18	22	4	1				
Louisiana	31	1	8	15	3	1				
Maine	26	12	16	16	1		1			
Maryland	30		16	2	3	1				
Massachusetts	27	9	14	16	11	1				
Michigan	22	18	31	74	11	1	1			
Minnesota	109	57	118	221	225	3		3		
Mississippi	27	11	6	31	6	1	1	1		
Missouri	64	23	28	46	70	3				
Montana	26		19	18	4	1	1			
Nebraska	112	50	40	63	67	1		2		
New Jersey	33	10	10	17		1				
New Mexico	20		9	9	6	1				
New York	172	4	145	210	184	5		1	3	5
North Carolina	18	4	5	26		1	1			
North Dakota	22	3	14	7				1		
Ohio	94	8	45	55	89	1		1	3	
Oklahoma	23	3	17	24	24	2				
Oregon	42	10	31	49	7	1				
Pennsylvania	41	31	59	97	44	2	3			4
Rhode Island	16		4	8		1				
South Carolina	25	11	19	9	1	1	1			
South Dakota	28	5	8	19	2	2	1			
Tennessee	28	6	7	18	11	1				
Texas	28	21	39	17	2	1	3			
Utah	29	6	18	18		1	1		1	
Vermont	53	2	11	35		3				
Virginia	27	13		13	15	1	1			
West Virginia	46	8	13	26	15	1		1		
Wisconsin	73	51	86	26	76	1	2	1		
Wyoming	27	2	7	19	15	1	2			
Total	1,734	517	1,284	1,691	1,167	57	36	18	15	9

The totals are not particularly significant, but the percentages computed therefrom are significant as they appear in Table 19.

Table 19—Percentages of Faculty Members of the Different Ranks in the Entire Faculties of the Land-Grant Institutions and in the Departments of Agricultural Education Within the Same Institutions.

<i>Ranks</i>	<i>Percentage of Total Faculty</i>	<i>Percentage of Agricultural Education Faculty</i>
Professor -----	27	42
Associate Professor -----	8	27
Assistant Professor -----	20	13
Instructor -----	27	11
Assistant -----	18	7
(Summary)		
Professorial rank -----	55	82
Lower than professorial rank.---	45	18

The percentages of the total faculty were calculated from the entire institution, excepting in the states of California and Massachusetts, for which the catalogs of the colleges of agriculture only were used—for California, because complete data were not available for all the colleges; and for Massachusetts, because there is no organic connection between the college of agriculture and the other institution participating in the land-grant funds.

SECTION 2.—INTERPRETATION OF FACTS SHOWN IN SECTION 1.

As has been mentioned in the beginning of this chapter, the special teacher of agriculture needs a broad and diversified preparation in order to succeed. This breadth and diversification are needed not only in the subject-matter studied, which will be considered more fully in Chapter V, but also in the points of view, aims, methods of procedure, and relative values which are likely to characterize the different kinds of colleges. Contact with the different faculties, classroom procedures, laboratory methods and equipment, systems of assignments and of evaluating and marking pupil achievement, standards of attainment, educational authorities, and many other experiences that give breadth and diversification to the preparation of the prospective teacher, so much needed by all, but particularly by the teacher of agriculture, are more fully attainable if the student studies in more than one college of an institution. The land-grant institutions are eminently fitted as a class to perform this service for the prospective teacher of agriculture, since about half of them are state universities, in

which it is possible for the student to participate in the work of the colleges of agriculture, arts and sciences, engineering, education, and others; while the better class of separate land-grant colleges that are not parts of universities have developed, in addition to strong work in agriculture faculties, libraries, laboratories, and courses in arts and sciences, in engineering, and in education, that rival, and in many instances surpass, those of many of the state universities. One familiar with land-grant institutions feels confident that they possess, as a class, the facilities for giving this breadth and diversification of preparation. To learn whether or not they were so organizing the work of preparing special teachers of agriculture as to take advantage of these facilities was the purpose of that portion of the questionnaire designated as B1 (Appendix A), the answers to which are found in Table B1 of Appendix B.

Tables 10 and 11—Where the Student is Taught. The facts in Tables 10 and 11 of this chapter furnish some interesting evidence. In Table 10 we find that the college of agriculture furnishes this student his agriculture in 100 per cent of the institutions replying, and also furnishes education in $27\frac{1}{2}$ per cent; his sciences, in 14 per cent; and his other subjects, in 17 per cent. The colleges of education furnish only one subject, and that is education; and that it furnishes in 45 per cent of the institutions, the other 55 per cent being offered $27\frac{1}{2}$ per cent in colleges of agriculture, $7\frac{1}{2}$ per cent in arts and sciences, $12\frac{1}{2}$ per cent in a combination between agriculture and arts and sciences, $2\frac{1}{2}$ per cent in a combination between agriculture and education, and 5 per cent unclassified.

Arts and sciences furnish education in $7\frac{1}{2}$ per cent, furnish sciences in about 70 per cent, and "others" in about 37 per cent of the institutions. A combination of the colleges of agriculture and arts and sciences furnishes the education in $12\frac{1}{2}$ per cent, the sciences in 14 per cent, and "others" in 8 per cent of the institutions.

The other colleges—such as medicine, engineering, "service"—are mentioned in various combinations in a few instances.

In Table 11 the numbers of institutions are distributed on the basis of the number of colleges in which the students of each institution pursue courses. In this table it is seen that in 3 per cent (nearest integer) of the institutions the student pursues courses in five different colleges; in 13 per cent of the institutions, in four colleges; in 38 per cent of the institutions, in three colleges; in 31 per cent

of the institutions, in two colleges; and in 16 per cent, in only one college.

Summarizing these shows that in 85 per cent of the land-grant institutions these students pursue courses in two or more colleges. This evidence, convincing as it is, is still further strengthened by an examination of the original tables (B1 in Appendix B), in which it is seen that some of the institutions classed among the one-college institutions—e. g., Michigan and Massachusetts—are among the institutions strong enough to give the necessary breadth and diversity to these students.

This table, by showing the prominence of the college of agriculture in furnishing both agricultural and educational work to the student, again emphasizes the statement previously made in this dissertation that there was evidence of the appreciation on the part of the land-grant institution administrative officers of the desirability of the agricultural work and the educational work of the student being closely interwoven during his collegiate preparation.

Table 12—The Agriculture Faculty. Special attention should be called to the fact that the figures in this table do not apply to the entire agriculture faculty of the institution, but only to those members of the agriculture faculty who teach courses to the students who are preparing to become special teachers of agriculture. Probably the most striking lesson to be learned from this table is that in the land-grant institutions, large and small, to the extent of the thirty-six reporting, this prospective special teacher receives instruction in agriculture from an average of twenty-one different members of the agricultural college faculty who hold the decree of bachelor, master, or doctor. When we add the statement that some most valuable instruction in agriculture is given by persons holding no degrees, we are more fully convinced that the land-grant colleges are admirably qualified to prepare special teachers of agriculture so far as the number of faculty members offering work in agriculture contributes to this end. And when we think of the high degree of specialization which such a large number of faculty members permits, we feel justified in saying that the land-grant institutions are excellently qualified to prepare special teachers of agriculture in so far as opportunity for thorough preparation in subject-matter by the differentiation of agricultural subjects is made possible by a large number of agriculture faculty members. When to this is added the evidence of the respectable number holding advanced degrees—58 per cent of the entire number—we conclude that the land-grant colleges are pre-

eminently qualified, so far as faculty is concerned, to give to this prospective special teacher his preparation in agriculture.

Table 13—The Education Faculty. As preparation in education is the other prime essential in the service which the collegiate institution is to perform for the prospective special teacher of agriculture, Table 13, which gives the same facts about the faculty members who teach him his education as Table 12 did about those who teach him his agriculture, is of equal value as evidence.

While the total number of faculty members teaching education to this student is necessarily smaller than the number teaching him agriculture, it is probably in fair proportion to the number of semester hours taught by each.

The most significant feature of this table is found in the number of faculty members teaching education to this student who hold the different degrees in comparison with those holding the same degrees who are teaching him agriculture. This is set forth in the next table.

Table 14—Degree Comparison of Agriculture and Education Faculties. This brief and simple table shows the superiority in preparation of those faculty members who teach the prospective special teacher of agriculture his educational subject over those faculty members who teach him his agricultural subjects, so far as the possession of bachelors', masters', and doctors' degrees indicate preparation for teaching.

Tables 15, 16, and 17—Character of Preparation and Experience of Education Faculty. The feature in which the preparation of the special teacher of agriculture is most likely to prove defective when applied is that the professional pedagogical training given him in his college course will fail to function in his work as a teacher. The principal reason for this is most likely to be found in the lack of practicality in the pedagogical work offered in his collegiate course, which, in turn, is most likely to be due to the fact that those of the faculty who teach the education courses lack proper preparation in some one of the four fundamentals—viz.: Practical agriculture, scientific agriculture, practical teaching experience in elementary or secondary schools, and scientific study of education. Onesidedness in this preparation makes it impossible to do the most successful work in correlating suitably methods and subject-matter for prospective teachers of agriculture. Degrees, though valuable as an indication of the ability to obtain an education, and of having done so to a certain extent, are not a sufficient measure of the character of the proper

preparation and experience of the person who is to teach education to the prospective teacher of agriculture. For that reason other and more important information was sought in the questionnaire (Appendix A, Part B, III, Questions 3 a, b, c, 4, 5, 6), the substance of which may be found in the paragraph introducing Table 15. In this table are some particularly convincing facts. Only one state in the list has a faculty with 100 per cent trained to the equivalence of a bachelor's degree in education only and not in agriculture. This faculty, however, consists of only one member, who for that reason especially should have been one who could qualify under column c. Over 62 per cent of the institutions have one or more of their faculty members who can qualify under c—that is, has preparation equivalent at least to a bachelor's degree in education and also a bachelor's degree in agriculture. When we consider the few men in the United States who have been so prepared and the enormous demand there has been on the part of the Smith-Hughes authorities, both federal and state, for men so trained to occupy positions in the administration of Smith-Hughes matters which lie almost entirely outside of actual teacher training and to the effects of the war, we must acknowledge the sincerity, earnestness, and determination of the land-grant institutions in manning their faculties so effectively.

When we consider that the numbers in Tables 15, 16, and 17 include all persons who teach education to this student, and that this includes those who teach psychology, history of education, and similar subjects somewhat removed from direct application to the teaching of agriculture, it is apparent that even to a larger degree than these tables indicate those who teach the more practical educational courses are persons who have had at least bachelor's training in both agriculture and education.

A very striking and convincing feature of these figures is the large number of institutions whose faculty members teaching education to these students show 100 per cent farm experience, while those showing 100 per cent experience teaching in elementary or secondary schools is even more striking and convincing. A fact even more convincing is the number—over 45 per cent—of the institutions 100 per cent of whose faculty were both reared on a farm and have had experience in teaching in elementary and secondary schools. To Texas belongs the distinction of having a good-sized faculty (4), standing 100 per cent in being educated in both agriculture and education (column c), 100 per cent reared on a farm, and 100 per cent experience in elemen-

tary or secondary school teaching. Connecticut, North Carolina, and Tennessee show also 100 per cent in each of these columns, but each has only one member of the faculty. In addition to the above, Minnesota and South Carolina, the former with six faculty members and the latter with three, show all three of these columns above 66 per cent.

The distribution of these percentages into 10-per-cent intervals, shown in Table 16, are mainly interesting because of the central tendencies appearing in columns b, c, d, e, and the lack of a dominating tendency in column a. Column a shows a rather irregular distribution, with the three major number of institutions at 0 per cent, 50 per cent, and 100 per cent. The most convincing feature of this column is the number of institutions (9) that have no member of the education faculty who is limited to preparation in education only, while the most to be regretted is the number who have education faculty members whose preparation is only in education. This is not quite so bad when we consider that over 80 per cent of these institutions have other members in the same faculty who are prepared in agriculture and who can teach those courses in education most closely connected with the future actual work of the teacher of agriculture.

Column b makes a strong showing of the small number of those who teach education who have preparation in agriculture with less than the equivalent of a bachelor's degree in education. Only one institution has 100 per cent of such persons (and that is an institution having only one member of the faculty), while the remaining forty-one have 50 per cent or less of their faculties so poorly equipped. Of these, thirty-one institutions have no members of their education faculties who are limited in their preparation to agriculture without the equivalent of a bachelor's degree in education.

Column c shows that seven of the forty-two institutions reporting have no one on their faculties of education who teach education to these students who has not preparation equivalent to at least a bachelor's degree in agriculture and also in education. This is the standard to be striven toward by the other institutions, particularly by the seventeen institutions having no member of its education faculty with this double preparation.

Column d furnishes evidence that from the standpoint of practical farm experience the institutions rank high in the number of their faculty members teaching education to this student who have had practical farm experience, having been reared on a farm. Of the forty-two institutions re-

porting, twenty-five of them have 100 per cent of their faculty members reared on the farm, while thirty-six of the forty-two have 67 per cent or more of their faculties reared on the farm, and only three institutions have none of their faculty members reared on the farm. Though the percentage of these faculty members with agricultural preparation equivalent to a bachelor's degree in agriculture is not as large as it should be for the best results, the fact that so large a percentage of those giving the education courses were farm reared is likely to give the education instruction the saving grace of practicability so far as its agricultural contacts are concerned.

Column e is as convincing as is column d in its evidence. It shows that of the forty-two institutions reporting, twenty-nine have 100 per cent of these education faculty members who have taught in elementary or secondary schools, and that thirty-six of them have 67 per cent or more of their faculty members who have had such experience. In this, as also in the small number (3) of institutions having no members with elementary or secondary teaching experience, column e is the same as column d.

The evidence of the promise of efficiency in this field is reinforced by Table 17, particularly by those figures showing the mode and the average. While the average per cent of column a (teachers with preparation equivalent to a bachelor's degree in education, but not equivalent to the bachelor's degree in agriculture) is all too large, the facts that the average of those having the equivalent of a bachelor's degree in agriculture and less than that in education is only 11 per cent, and that the average of those having the double preparation of the equivalence of the bachelor's degree in education and also in agriculture is 35 per cent, give most convincing evidence, especially under the unfortunate conditions of supply and demand, of men possessing this very desirable double preparation. The averages of the percentages having farm experience and teaching experience—81 per cent and 85 per cent, respectively—are also most convincing proof of the faculty facilities of land-grant colleges for their task of preparing special teachers of agriculture.

Modes, not always significant, are here forceful in supporting the conclusions to be drawn from the other figures. That the modes for farm experience and previous teaching experience in elementary or secondary schools should be 100 per cent and that for teachers with training in agriculture, but not in education, 0 per cent, are strong arguments for the support of the statement that the land-grant insti-

tutions are well adapted to the training of special teachers of agriculture so far as farm and teaching experience can equip a faculty for this duty. The mode of column c, the double preparation standard, is not so favorable a sign; but the previous explanation of the causes creating this condition removes most of the significance of the criticism.

Tables 18 and 19—Professorial Rank. The numbers of faculty members of each rank in each institution shown in Table 18 constitute the facts which produced the quantities in Table 19.

If there should remain any doubt as to the importance which those in charge of the land-grant institutions attach to their responsibility for the great duty placed upon them of properly preparing special teachers of agriculture for the United States or of the opportunity being open for those engaged in this work to function efficiently, it should be dispelled by this table.

If it were the intention to treat this work as of minor importance or, while placating public demand by installing it, to prevent its becoming efficient, the land-grant institutions could have relegated these faculty members to unimportant professorial ranks, which would have been both easily done and quite efficacious in hampering the success of the work of preparing the special teachers of agriculture.

What was actually done by the land-grant institutions in this regard is shown in Table 19, where a comparison is made between the professorial ranks of the faculty members of the departments having in charge the preparation of special teachers of agriculture in the land-grant institutions and the entire faculty membership of the same institutions.

The agricultural education faculties far exceed the entire faculties in members bearing the rank of full professor, having 42 per cent, as against 27 per cent for the entire faculties. This superiority is again shown in the number of those holding the second rank, that of associate professor, wherein the agricultural education faculties show 27 per cent, as against 8 per cent for the entire faculties—a ratio of over three to one in favor of the faculties of agricultural education. In the three less important ranks of assistant professor, instructor, and assistant, the preponderance progressively increases in the entire faculties, as is shown by the numbers 13-20, 11-27, 7-18, the first number in each pair representing agricultural education.

The conclusive facts appear in the last two items in the table, which show that of the members of the agricultural education faculties, 82 per cent are of professorial rank;

while of the entire faculties, only 55 per cent are of such rank; and, complementary thereto of the agricultural education faculties, only 18 per cent are of lower than professorial rank; while of the entire faculties, 45 per cent are of lower than professorial rank.

SECTION 3—CONCLUSIONS FROM SECTIONS 1 AND 2

The facts in Section 1 and the interpretation given to these facts in Section 2 seem to warrant the following conclusions:

1. The distribution over the several colleges of the land-grant institutions of the courses of the student who is preparing to become a special teacher of agriculture gives him an opportunity to obtain that breadth and diversity in points of view, methods, relative values, classroom procedure, laboratory methods and equipment, systems of assignment, and of evaluating and marking pupil achievement, standards of attainment, educational authorities, and other acquisitions, that will conduce to his success as a teacher and which could not be attained to the same degree in less diversified college experience.

2. Since every land-grant institution has a college of agriculture as one of its major units and gives the prospective special teacher of agriculture his agricultural preparation in that college, these institutions, as a class, are well prepared to give through this college to these prospective teachers their preparation in agriculture.

3. That there is a strong tendency in the land-grant institutions to give a vital coalescence to the agricultural instruction and the educational instruction of the prospective teacher of agriculture which makes for efficiency in his future teaching.

4. That the large number of different faculty members teaching agriculture to this student makes possible a degree of specialization on the part of the faculty which should result in a deeper and more thorough preparation on the part of the student in the land-grant institutions than is possible in institutions with a more limited number of faculty members teaching agriculture, and that, therefore, the land-grant colleges are well fitted by the size of their agricultural faculties to give to this prospective special teacher the preparation he needs in agriculture.

5. That, so far as degrees are a measure of fitness, the land-grant institutions show a commendable measure of preparation on the part of the faculty members teaching

agriculture to this student, and even more commendable on the part of those teaching him his education.

6. That while the collegiate preparation in agriculture and in education of the members of the faculties who teach education to these prospective teachers in the land-grant colleges has not yet attained a satisfactory standard, still the land-grant institutions have accomplished all that could be expected of them in obtaining well-equipped faculty members for this special work, considering the state of supply and demand of suitably prepared men.

7. That in the practical qualifications of having been reared on a farm and of having taught in an elementary or secondary school, the education faculty members of the land-grant colleges who teach education to this special student are well equipped for effective service in preparing special teachers of agriculture.

8. That the recognition given the agricultural education faculty members of the land-grant institutions in the matter of professorial rank indicates an appreciation on the part of the land-grant institutions of the importance of preparing special teachers of agriculture and of the responsibility of these institutions for furnishing such preparation.

9. That this recognition of the agricultural education faculty should be a factor in increasing the efficiency of the land-grant institutions in their work of preparing special teachers of agriculture. These specific conclusions lead to the general conclusion:

10. That in the distribution of the student's work over several colleges, in the preparation and experience of those who teach him, and in the ranking of those who are in direct charge of his special preparation for teaching, the land-grant institutions are bearing successfully their responsibilities for the preparation of special teachers of agriculture.

CHAPTER IV

SPECIAL FITNESS REQUIRED FOR ENTERING UPON COLLEGIATE PREPARATION AS A SPECIAL TEACHER OF AGRICULTURE

Section 1. The facts regarding the entrance requirements in general to the land-grant colleges; the variations for those students who are preparing to become special teachers of agriculture; the time when these students begin to differentiate their curriculum and any special fitness required at that time.

Section 2. An interpretation of the facts shown in Section 1.

Section 3. Conclusions deduced from Section 1 and Section 2.

SECTION 1.—THE FACTS REGARDING SPECIAL FITNESS

Entrance to Land-Grant Colleges of Agriculture.—The United States Bureau of Education has published (United States Bureau of Education Bulletin, 1918, No. 28, pp. 19-31) the entrance requirements to the colleges of agriculture of the land-grant institutions as shown mainly by the catalog announcements for the year 1917-18. From that source is obtained the following information:

"In each of these institutions applicants are admitted by either examination or certificate." "Larger proportions of students each year are being admitted by certificate." "Certificates are accepted generally from not only the high schools that are accredited by the institutions themselves, but from high schools that are accredited by state colleges and universities in other states." "In twenty-eight of the institutions there is a definite minimum age limit for admission to freshman standing. In twenty-four of these the limit is fixed at sixteen years; in two institutions it is fifteen years; in two others it is fourteen years." In the other institutions there is no age limit. For admission as special or unclassified students, twenty-five require the applicants to be at least twenty-one years, nine require eighteen years, and the remainder publish no special age restrictions. "In none of the institutions is farm experience a rigid requirement for admission." Some list a requirement, but give opportunity to obtain it during the college course. "In eighteen institutions farm experience in varying amounts is required some time before graduation."

All the colleges except three require at least 14 units for

regular admission, which is regarded as the minimum required by standard colleges. The median requirement is 15 for the land-grant colleges of agriculture. The total number of prescribed units ranges from 4 to 10½, the median being 8. Only three states required fewer than 14 units for admission—viz., North Carolina, South Carolina, and Mississippi.

Figures collected by the United States Bureau of Education show that twenty-two of the land-grant institutions increased the number of units required for admission in 1917-18 by a total of 88½ over the number required in 1912-13. (United States Bureau of Education Bulletin, 1918, No. 29, p. 74.) This is an average increase during the five-year period of 4 units per institution increasing and of 1-8 units per land-grant institution (white in continental United States).

This was sufficient to change the median number of units required in the land-grant colleges from 14 in 1912-13 to 15 in 1917-18. (United States Bureau of Education Bulletin, 1918, No. 29, p. 24.) "This increase in requirements has been made possible to some extent by substituting vocational subjects for certain academic subjects, which seems to indicate a general liberalizing of the college-entrance requirements." (Ibid.) Of the 88½ units increase, 46 units were in ten of the thirteen institutions of the Southern states, while 42½ units were in twelve of the other thirty-five states.

By grouping the various land-grant institutions geographically, we see that of those falling within the territory of the North Central Association of Colleges and Secondary Schools—viz., Ohio (15),* Indiana (15), Illinois (15), Michigan (15), Wisconsin (14), since raised to 15 (Appendix B), Minnesota (15), Iowa (15), Missouri (15), Oklahoma (15), Kansas (15), Nebraska (15),* South Dakota (15), North Dakota (15), Montana (15), Wyoming (15), Colorado (15)—every one of the sixteen states has the full requirement of 15 units that has been set by this association as the standard for all classes of colleges within these states. (United States Bureau of Education Bulletin, 1918, No. 19, for units in each state, and Proceedings of North Central Association of Colleges and Secondary Schools for standards.)

By the same process we see that of the thirteen states lying in the territory of the Association of Colleges and Secondary Schools of the Southern states, eleven of the land-grant colleges—that is, Virginia (14), West Virginia (15),

*Units.

Georgia (14), Florida (16), Alabama (14), Mississippi (14), Louisiana (14), Texas (14),* Tennessee (14), Kentucky (15), and Arkansas (14)—are either up to or above the requirements set by that association for all standard colleges within the states of the association. In the territory of this association only two land-grant colleges—North Carolina and South Carolina—are below the requirements set for all standard collegiate institutions within that territory.

The land-grant institutions in the unassociated territory to the west of these two great standardizing associations—viz., Idaho (15), Utah (15), Nevada (15), Arizona (15), California (15), Oregon (15), and Washington (15)—have unanimously set their standards of entrance equal to the requirements of the higher of the two association standards—viz., the 15 units of the North Central Association.

Of the five states in the territory of the Association of Colleges and Preparatory Schools of the Middle States and Maryland—New York (15), New Jersey (15), Pennsylvania (15), Delaware (14), and Maryland (15)—four of the five have a standard equal to that of the North Central Association, and the fifth equals the standard of the Southern Association. Though the system of the Middle States is not so well standardized as are the systems of the North Central and Southern Associations, its college-entrance certificate board determining the standards for the association through its system of examinations (Pedagogical Seminary, September, 1916), yet when expressed on the unit basis they are as shown above (United States Bureau of Education Bulletin, 1918, No. 29, p. 74).

Of the land-grant colleges situated within the territory of the New England Association of Colleges and Secondary Schools—viz., Maine (14½), New Hampshire (15), Vermont (14½),* Massachusetts (14), Rhode Island (14), and Connecticut (14)—all are at or above the unit standard set by the Southern Association, while some of them reach that of the Central Association. The New England system is quite unlike that of the Central or Southern Associations, in that the college certificate board bases its system of accrediting secondary schools upon the success of students who attend the colleges that are members of the association (Pedagogical Seminary, September, 1916); but on the unit basis the land-grant institutions of the New England States rank as shown above (United States Bureau of Education Bulletin, 1918, No. 29, p. 24).

*Since increased to 15. (Appendix B.)

Changes in Entrance Requirements.—The replies to the questionnaire show the following to be the only changes made in the entrance requirements since the year 1916.

Colleges to the number of thirty state definitely that there have been no changes, and three colleges do not mention any changes. Of the remainder, the following changes are given: One year each of social and natural sciences required (two years in 1920); no foreign language required; more agriculture accepted; raised to 14 units (Mississippi); no foreign language required; additional $\frac{1}{2}$ unit of book-keeping and $\frac{1}{2}$ unit elective allowed toward entrance; more agriculture accepted; raised to 15 units (four colleges); three years' English required if no foreign language and 4 vocational units accepted; decreased history 1 unit, increased mathematics $\frac{1}{2}$ unit, foreign language dropped; one additional unit in agriculture accepted. (Unless otherwise shown by a parenthetical expression, each item set off by semicolons represents one institution.)

Comparison of Entrance Requirements of Students Who Are to Prepare for Teaching with Others.—The replies to the question, "Do entrance requirements to the freshman class for those preparing to become special teachers of agriculture differ from those required of other students?" produced the following facts (Appendix B, Table C):

Table 20—Do Entrance Requirements Differ for the Prospective Special Teacher of Agriculture?

<i>Replies</i>	<i>Number of Institutions</i>
No	39
Miscellaneous	4
Not replying	5
Total	48

The miscellaneous replies were: Adequate farm experience; three years' farm experience; farm experience two years or equivalent; and farm experience.

When Student Begins to Differentiate His Curriculum.—The point in the college curriculum at which the student who is preparing to teach begins to differentiate his curriculum is shown in Table 21. (Appendix B, Table C.)

Table 21—Where Prospective Special Teacher of Agriculture Differentiates His Curriculum.

The Preparation of

<i>Year</i>	NUMBER OF INSTITUTIONS	
	<i>Reported</i>	<i>Redistributed</i>
Freshman	5	(5)
Sophomore	5	(5)
Sophomore (second semester)	3	(4)
Sophomore or Junior	2	(0)
Junior	28	(29)
Senior	1	(1)
No reply	4	(4)
Number institutions total	48	48

In the final column the sophomore-junior was equally distributed between sophomore and junior.

Evidence of Special Fitness.—Whether at the time the prospective special teacher of agriculture differentiates his curriculum he must furnish evidence of special fitness or preparation that is not required of other students, and, if so, what is shown in Table 22. (Appendix B, Table C.)

Table 22—Must Special Fitness be Shown, and, if so, What?

<i>Replies</i>	<i>Number of Institutions</i>
No	26
Personal conference	4
Farm experience	8
Personal qualities	3
Combination of above	2
Miscellaneous not above	3
No reply	5
Total	48

The miscellaneous are: "We try to practice a system of selection by encouraging the best students to take the agricultural education course" (Louisiana); "He must signify his intention of becoming a teacher of agriculture" (Minnesota); "Grades and personality" (Montana). The amount of farm experience required is not mentioned in some of the replies, while two years is mentioned in three states, two years after being twelve years of age in one, five years in one, and "adequate" in one.

SECTION 2.—INTERPRETATION OF SECTION 1

Entrance Requirements.—The facts contained in the paragraphs treating of the entrance requirements to the land-grant colleges of agriculture point definitely to one important conclusion, which is that these institutions, as a class, rank equal to or above the other standard collegiate institutions located in the same geographico-educational areas of the United States. This is shown convincingly by the following:

Of the sixteen land-grant colleges of agriculture within the area of the North Central Association of Colleges and Secondary Schools, which is recognized as one of the most authoritative bodies, if not the most authoritative body, of voluntary standardizing educational associations of the United States, all measure up to the standards set by that association.

Of the thirteen land-grant colleges of agriculture within the area of the Association of Colleges and Secondary Schools of the Southern States, which is second only in importance to the North Central Association, all but two measure up to the standards set by that association.

In the eight mountain and Pacific Coast states, unorganized into an association, but largely influenced by the North Central Association, all the land-grant colleges of agriculture measure up to the high standards of the North Central Association.

While the Association of Colleges and Preparatory Schools of the Middle States and Maryland uses a somewhat different system, yet when measured by the standards of the North Central and Southern Associations, the land-grant institutions show five on the high standard of the North Central Association and the remaining one on the standard of the Southern Association.

Though the system in use in New England is not a unit system, when reduced to that basis the land-grant institutions of those six states show three on the Southern basis, two on the North Central basis, and one halfway between them.

Summarizing these gives the clear-cut evidence that of the forty-eight states, the land-grant institutions in forty-six of them (96 per cent) have entrance requirements which meet the standards set by one or the other of the two great entrance-requirement standardizing associations of America, and only two of them (4 per cent) fail to do so.

The convincing character of this is increased by the knowledge that these standards have not been determined by the land-grant institutions themselves, but by the representatives of all kinds of high-grade colleges and secondary schools from twenty-nine of the states occupying the great central area of our country working assiduously together for many years.

All of this confirms the conclusion that so far as meeting standard quantitative entrance requirements is concerned, the land-grant colleges, as a class, are bearing successfully their responsibility of preparing special teachers of agriculture.

An interesting by-product of the facts regarding entrance requirements is the remarkable showing made by the Southern States in the period between 1912-13 and 1918-19, during which time ten of the thirteen states increased the number of units required for entrance into the land-grant institutions a total of 51 units, which equals 5.1 units per institution participating, or about 4 units per each of the thirteen institutions.

This enables one to conclude that the land-grant institutions in the Southern States are rapidly raising their entrance requirements up to or above the standards set by the association of their territory and closely approaching the median for the United States.

Few changes of importance have been made in the entrance requirements in the past two years, excepting the increase in the number of units required for admission, already mentioned, on the part of several institutions.

The other items worthy of notice are the acceptance for entrance of more of the vocational subjects, such as agriculture, and the abandoning of the foreign-language requirement in a few institutions.

So far as these affect the work of the land-grant institutions, they would have a tendency to increase their efficiency in the preparing of special teachers of agriculture by attracting students who have already shown an interest in the vocational subjects; by enabling such students to profit more from their college work because of more previous preparation in the vocational field; by making the teaching of agriculture more attractive because of the student's early experience with it before entering college, and by making him a more successful teacher because of his experience in studying agriculture in a secondary school.

If a conclusion were to be drawn from this acceptance for entrance of more vocational subjects, it would be that the land-grant colleges, by such changes in their entrance requirements as have been recently made, show a tendency toward admitting more readily students who will ultimately make good special teachers of agriculture.

Table 20—Difference in Entrance Requirements. This table shows that the greatest difference made between the entrance requirements for the prospective special teacher of agriculture and other students is farm experience. It shows that the entrance standards for this class of students are not only as high as for other students of the colleges of agriculture of the land-grant institutions, but that in some instances they are higher, and, when higher, the additional requirement (farm experience) is one that will

have a large and beneficial effect upon their fitness to be special teachers of agriculture.

The full extent to which farm experience is required of this student is treated again in connection with Table 22.

Table 21—When This Student Begins to Differentiate His Curriculum. This table shows that in 68 per cent of the institutions this differentiation takes place later than the end of the sophomore year and in 78 per cent not before the middle of the sophomore year. While a more nearly unanimous agreement is to be desired, this shows the general tendency of these institutions to require two years of college work before permitting specialization.

The advantages of differentiating at this point are many and important. It gives to this student the same general training in the fundamentals of his college course as other students receive. By causing the student to defer his choice of a field of specialization until the junior year, the maturity which he has acquired and the collegiate training which has shown him more plainly his own abilities and preferences and improved his judgment regarding future possibilities in the various occupations, professions, and vocations, will enable him to make his choice with greater wisdom.

By making his choice at the beginning of the junior year, the student still has two years remaining in which to give special attention to preparing himself for teaching. In this period he can obtain the professional training which has been shown to be necessary, and also to properly distribute his preparation over the various agricultural subjects and correct any inequalities of practical experience and scientific training which he may possess.

In making the differentiation at the junior year, the majority of the land-grant colleges are in harmony with the spirit of the times, which is finding expression in the requirements of the standard professional schools, such as medicine, law, and education.

Table 22—Evidence of Special Fitness. From the questionnaire replies shown in Table 22 it is plain that while twenty-six of the forty-three colleges replying state that they have no specific requirement at this time, the remaining replies indicate that a practice is developing of those in charge satisfying themselves that the student is adapted by personality, attitude, and experience to becoming a teacher.

The extent to which the land-grant colleges are to require farm experience of at least two years previous to entering upon collegiate training for teaching is shown in the attitude of those administering the Smith-Hughes law. The

federal officers in charge insist that the prospective special teacher of agriculture should have at least "two years of successful experience in farming, gained largely after he has reached the period of life where he can approximate the work of a man on a farm." (Federal Board for Vocational Education, Bulletin No. 27, p. 17.)

Again, they say: "The minimum amount of farm experience (for graduation) should be at least the minimum two years of practical experience required for entrance plus an additional amount of farm practice in the college course." (Federal Board for Vocational Education, Bulletin No. 13, p. 25.)

When it is realized, as has been shown previously in this dissertation, that the land-grant colleges in all of the states (save possibly one) have been designated as institutions for the preparation of special teachers of agriculture under the Smith-Hughes law, it may be safely predicted that as soon as the land-grant colleges come into full operation under the law and peace conditions reestablish a normal number of students in the colleges, the requirement of two years of practical and successful farm experience will be made for all who are to enter upon preparation in the land-grant colleges to become special teachers of agriculture.

SECTION 3.—CONCLUSIONS FROM SECTIONS 1 AND 2

The foregoing facts and their interpretation seem to justify the following conclusions:

1. That the land-grant institutions, as a class, maintain as high entrance requirements as are maintained by other standard institutions of collegiate rank in the United States offering both junior and senior college work.

2. That the changes that have been made in entrance requirements by the land-grant colleges in the last seven years have been toward raising the number of units and toward accepting for entrance more units which are practical for students who are to become special teachers of agriculture.

3. That where entrance requirements for the student who is to become a special teacher of agriculture differ from those required for other students, the difference is in the direction of requiring previous farm experience and the possession of certain desirable personal characteristics which tend to increase his fitness as a special teacher of agriculture.

4. That the land-grant institutions, as a class, tend to require the student to defer the making of his choice of specialization until he has had two years of college work.

5. That the land-grant colleges are rapidly approaching the time when the requirement of at least two years of successful practical farm experience will become general for all persons who undertake to prepare as special teachers of agriculture.

These five conclusions lead to the general conclusion that:

6. The land-grant colleges, as a class, by quantitatively maintaining the same entrance requirements as do other standard colleges, and at the same time qualitatively emphasizing especially the possession of farm experience and favorable personal qualities, exhibit a high degree of adaptation to the successful preparation of special teachers of agriculture so far as requirements for students entering upon this preparation can affect such successful preparation.

CHAPTER V

WHAT THE PROSPECTIVE SPECIAL TEACHER OF AGRICULTURE STUDIES

Section 1. The facts regarding a required curriculum, the distribution of this student's courses over six general classes of subjects and also over twelve different subjects in agriculture, and over six different subjects in education.

Section 2. Interpretation of these facts.

Section 3. Conclusions drawn from Sections 1 and 2.

SECTION 1.—THE FACTS

Specified Required Curriculum.—The first noticeable feature of the conditions regarding the curriculum is the number of institutions requiring a specific curriculum of this student. This stands out very plainly in Table 23. (Appendix B, Table D.)

Table 23—Number of Institutions Requiring a Specified Curriculum of the Prospective Special Teacher of Agriculture.

Replies	Number of Institutions
Yes -----	38
No -----	4
Not replying -----	6

The four who reply "No" immediately proceed in the latter portion of the questionnaire to show in detail the number of hours "required" in the various subjects that constitute the curriculum, showing that in replying "No" these persons had put a different construction upon the term "specified curriculum" than had the others. Classifying those as replying "Yes" where they ought, doubtless, to be classified, we have forty-two having a specified curriculum that is required of the students, with six institutions not replying.

WHAT THIS CURRICULUM CONTAINS

General Distribution.—To determine the distribution over the various fields of knowledge which characterize this curriculum, detailed information was asked for in the questionnaire (Appendix A) regarding the number of semester hours required of this student in each of the six fields of knowledge—viz., agriculture, science, nontechnical, professional (educational), elective, and military and physical. The information so gathered furnished the data found in Table 24. (Appendix B, Table D.)

Table 24—Number of Semester Hours Required of This Student and Number of Institutions Requiring That Number Distributed Through Groups of Ten Hours Each.

<i>Hours Required</i>	INSTITUTIONS REQUIRING THIS NUMBER IN EACH OF THE FOLLOWING SUBJECTS:					
	<i>Agri- culture</i>	<i>Sciences</i>	<i>Non- technical</i>	<i>Pro- fessional</i>	<i>Elec- tive</i>	<i>Military and Physical</i>
100-91 -----	1					
90-81 -----	0					
80-71 -----	2					
70-61 -----	4					
60-51 -----	15	4				
50-41 -----	9	9	2			
40-31 -----	8	18	4	1		
30-21 -----	1	8	10	10		1
20-11 -----		2	19	27	6	5
10-1 -----			3	3	32	30

From the same sources have been obtained the facts for the next table (No. 25), which shows in more consolidated form the characteristics of these figures.

Table 25—Showing Maximum, Average, Median, Mode, Minimum, and Number of Institutions Reporting the Semester Hours of the Subjects Shown in Table 24 Required of This Student.

	<i>Agri- culture</i>	<i>Sciences</i>	<i>Non- technical</i>	<i>Pro- fessional</i>	<i>Elec- tive</i>	<i>Military and Physical</i>
Number reporting--	40	41	38	41	38	36
Maximum hours ---	96	59	48	33	24	23
Average hours ----	52	37	21	18	7	7
Median hours ----	53	37	19	16	7	6
Minimum hours ---	30	15	5	9	3	2
Mode -----	51-60	31-40	11-20	11-20	1-10	1-10

The facts in Table 26 are computed from the total number of hours required in each class of subjects and the grand total required in all of the classes of subjects in the full curriculum of this student.

Table 26—Showing the Percentage Which the Number of Hours in Each Class of Subjects is of the Total Number Required in All Classes of Subjects in the Curricula for Special Teachers of Agriculture.

<i>Subjects</i>	<i>Per Cent</i>
Agriculture -----	36.5
Sciences -----	26.5
Nontechnical subjects -----	14.1
Professional subjects -----	12.7
Elective -----	4.8
Military and Physical Training -----	5.4
Total -----	100

For purposes of comparison there will be found in Table 27 the same items (as nearly as they conform to the above) that are required by the land-grant colleges for the student who specializes in agronomy. (United States Bureau of Education Bulletin, 1918, No. 29, pp. 37-40.)

Table 27—Percentages of Distribution of the Requirements for Graduation of the Student Specializing in Agronomy in the Land-Grant Colleges.

<i>Subjects</i>	<i>Per Cent</i>
Agriculture -----	36.5
Sciences -----	30.6
Nontechnical -----	16.6
Elective -----	10.7
Military and Physical Training -----	5.6
Total -----	100

Agriculture Distribution.—After knowing the general distribution which is made of the work of the prospective teacher of agriculture, the next two most important things to know are how wisely his agricultural work is distributed over the various agricultural subjects, and also how wisely his educational work is distributed over that field. This information was gathered by the questionnaire, and is shown in the remaining tables of this section.

Table 28—Showing the Maximum, Average, Median, Mode, Minimum, and Total Semester Hours, in the Subjects Shown, Required in the Land-Grant Colleges of the Student Who is Preparing to Become a Special Teacher of Agriculture, Together with the Number of Institutions Reporting in Each Instance.

<i>Subjects</i>	<i>HOURS</i>					<i>Total Hours</i>	<i>Colleges Reporting</i>
	<i>Maxi- mum</i>	<i>Aver- age</i>	<i>Me- dian</i>	<i>Mode</i>	<i>Mini- mum</i>		
Farm Crops -----	17	7	7	8	3	279	38
Soils -----	11	5	5	5	3	192	38
Animal Husbandry --	24	8	7	8	0	284	38
Dairy Husbandry ----	10	4	3	3	0	137	38
Dairy Manufacturing--	5	2	2	3	0	71	38
Horticulture -----	21	6	6	6-3	0	243	38
Veterinary -----	10	3	3	4-3	0	105	26
Farm Engineering----	26	7	5	5-3	0	249	38
Poultry -----	8	3	3	3	0	93	38
Bees -----	3	1.13	0	0	0	3	38
Farm Management----	8	3	4	3	0	117	38
Genetics -----	6	1	0	0	0	48	38
Unclassified -----	33	7	2	0	0	260	38

Table 29 shows the total number of hours of Table 28, converted into the per cent which each agricultural subject is of the grand total number of hours devoted to agriculture.

Table 29—Per Cent Which the Number of Hours This Student Devotes to Each of the Various Agricultural Subjects is of the Grand Total Number of Hours Devoted to Agriculture.

<i>Subject</i>	<i>Per Cent of Total</i>
Farm Crops -----	13.4
Soils -----	9.2
Animal Husbandry -----	13.6
Dairy Husbandry -----	6.5
Dairying -----	3.4
Horticulture -----	11.6
Veterinary -----	5.
Farm Engineering -----	11.9
Poultry -----	4.4
Bees -----	.1
Farm Management -----	5.6
Genetics -----	2.3
Unclassified -----	12.4
Minor Fractions -----	.6
Total -----	100

In the case of Animal Husbandry, Dairy Husbandry, and Dairying, some institutions reported all three in one number. This is probably due to the courses being undifferentiated, all being under the title of Animal Husbandry or the two titles of Animal Husbandry and Dairy Husbandry. When they have been so reported, a distribution has been made that corresponds to the distribution usually found where all three titles are in use. This will, doubtless, represent better what the student actually studies in those institutions than would be done if the hours were subsumed under the fewer titles as reported.

Institutions filling the blanks in this portion of the questionnaire, but leaving certain blanks unfilled, were counted as requiring no hours in that subject.

Education Distribution.—In Tables 30 and 31 will be found the same facts for the educational work of the prospective special teacher of agriculture as are shown for his agriculture in Tables 28 and 29. (Appendix B, Tables D—Continued.)

Table 30—Maximum, Average, Median, Mode, Minimum, and Total Semester Hours in the Various Educational Subjects Required in the Land-Grant Colleges of the Student Who is Preparing to Become a Special Teacher of Agriculture, Together with the Number of Institutions Reporting.

Subjects	Maximum	Average	Median	HOURS		Total Hours Reporting	Colleges Reporting
				Mode	Minimum		
Psychology -----	10	4	3	3	0	153	41
Theory (Principles, etc.)	9	3	3	3	0	113	41
Methodology -----	17	4	3	3	0	172	41
Administration -----	13	2	2	3	0	88	41
Practice Teaching ---	15	4	3	3	0	153	41
History of Education_	5	1	0	0	0	47	41
Unclassified -----	12	2	0	0	0	84	41

In these figures, as in those of Table 28, institutions replying to this part of the questionnaire were counted having no hours required unless the number of hours was given.

From the totals in Table 30 the per cents shown in Table 31 are made.

Table 31—Per Cent Which the Number of Hours This Student Devotes to Each of the Educational Subjects is of the Total Number of Hours Devoted to Educational Subjects.

Subjects	Per Cent of Total
Methodology -----	21.2
Practice Teaching -----	18.8
Psychology -----	18.8
Theory (Principles, etc.) -----	13.9
Administration -----	10.8
Unclassified -----	10.3
History of Education -----	5.8
Minor Fractions -----	.4
Total -----	100

SECTION 2.—INTERPRETATION OF THE FACTS STATED IN SECTION 1

Table 23 — The Required Curriculum. Those familiar with the efforts to obtain the first supply of teachers to conduct the teaching of agriculture in the high schools into which that subject was introduced a few years ago recall that it was quite impossible to obtain a supply of men who were adequately prepared for their work. If specific criticisms were to be made of their college preparation, the most outstanding ones would be that their agricultural studies had not been wisely distributed over the agricultural subjects in colleges, and their educational preparation was usually entirely lacking, and, when not lacking, was very likely to be of the nonfunctioning variety typified by

the "History of Education" of those days. (Chapter I and college catalogs of that period.)

If a man were a graduate, or near graduate, of an agricultural college, his pedagogical preparation or the sound distribution of his technical agriculture over the essential subjects was frequently not inquired into closely.

Since those days the land-grant colleges have responded to an enlightened public demand, aided by an increased supply (except for the temporary shortage due to the war) of available men, and have made great strides forward in their plans for the proper preparation in agriculture and in education of these prospective teachers. As can be seen by the facts in Section 1 of this chapter, the land-grant colleges are furnishing to the students who are preparing to become special teachers of agriculture curricula adapted in the main to meet their needs, and are requiring such a distribution as will give to them a fairly well-balanced preparation for their duties.

The first fundamental is that this teacher shall pursue a college curriculum so arranged that when he has finished he shall not be a specialist in agronomy, or animal husbandry, or horticulture, or agricultural engineering, or farm management, or in any other subject limited largely to one field of agriculture, but that he shall have the fundamental courses in all the essential fields of work offered by the agricultural college. This is necessary because the agriculture which he will be required to teach in the better class of secondary schools includes work in all of these fields of agricultural knowledge.

The curricula in operation in most of the land-grant colleges of a few years past were formulated to produce specialists in some one field of agriculture. (See catalogs.) The early teachers of secondary agriculture were of necessity chosen from persons so prepared. An examination of the catalogs of the time will give evidence that even after the demand for special teachers of agriculture had arisen, faculties seemed to think that students prepared as specialists in some one field of agricultural subject-matter were thereby prepared to teach the agricultural subjects in secondary schools.

The extent to which sentiment in the land-grant colleges has changed from that point of view to one that advocates and provides a special and definite four-year curriculum intended to meet the needs of this special teacher of agriculture by giving him the well-balanced preparation his future usefulness demands is shown in Table 23 and the paragraph following. From this table it is plain that prac-

tically all of the land-grant colleges have provided this definite curriculum which is to be required of those who aspire to teach.

Of the six not replying, two stated that the curricula were undergoing revision, and the other four are the states mentioned in the introduction as not having filled and returned the questionnaire.

Tables 24, 25, 26, and 27—Curriculum Distribution. The next most important curriculum question is that of the distribution of the student's work in the fields of technical agriculture, sciences, nontechnical subjects, professional subjects, elective, and military or physical training. While Table 24 shows a convincing distribution of the institutions throughout the various number of hours required in the different fields, Table 25 furnishes strong evidence of a distribution which approximates a normal one. The averages and medians are identical in two subjects, vary by only 1 unit in two subjects, and vary by only 2 units in two subjects; while of the twelve instances of the averages and medians, eleven of them fall within the modal groups for their subjects, and the only one that falls outside of the modal group is one average that exceeds by only 1 unit the upper limit of its 10-unit mode.

In Table 24 the tendencies and the range both show a high degree of uniformity, especially when it is known, as appears in the reports, that some of the institutions showing a low number of required hours in agriculture did not include a certain number of hours in agriculture not designated by naming particular courses, but that were elective only in the sense that they were not specially designated, since they were required in the sense that the election must be exercised in agricultural subjects.

Even though the various institutions were found to be in substantial agreement as to the distribution of the curriculum of this particular class of students, there would still remain the question of whether or not this is a well-balanced distribution. The answer to this question may be found in a comparison of Tables 26 and 27.

When the United States Bureau of Education wanted to make a study of the requirements for graduation from the colleges of agriculture, it chose the agronomy curriculum as the type. (Jarvis, United States Bureau of Education Bulletin, No. 29, 1918.)

This was a wise choice to make, since the agronomy curricula of the colleges are less extremely specialized than are the other subject-matter curricula (catalogs of colleges).

and consequently represent in better balance the constant elements.

By reducing the hours of the various fields of study to the per cent basis, we can easily compare them with almost identical fields in the agronomy curricula of the land-grant colleges.

The first evidence that the special curriculum which this prospective teacher is required to pursue is fitted to equip him for his work is that it requires the same number of semester hours of technical agriculture as does the curriculum provided for the agronomy man who is going to farm or to engage in agriculture as a technical science—viz., 36.5 per cent. This is evidence that the land-grant colleges, as a class, stand firm on the principle that if a man is to be a teacher of agriculture he must know a great deal of agriculture, and not simply a great deal of something else and a very little about agriculture. It shows their lack of sympathy with the argument that if a person knows well the sciences upon which agriculture relies, he can teach agriculture. The land-grant colleges insist that the man who is to teach agriculture in secondary and elementary schools must take as much college agriculture as does the man who is to farm or engage in some form of agriculture as a technical science.

As the prospective teacher is required to utilize 12.7 per cent of his curriculum upon his professional educational work, the question arises as to where he is to obtain this. Very little can be obtained from the military and physical training, as the federal requirements for military training according to the regulations under the First Morrill Act (1862) (Chapter I) are practically an irreducible minimum in all curricula, though the tables show that he does obtain .2 per cent from military and physical training. The other 12.5 per cent he must obtain from sciences, nontechnical, and elective subjects. Wisely, almost half of this (5.9 per cent) is taken from the electives allowed the agronomy student. This is a sound policy, because the curriculum of the prospective teacher being already a well-balanced one, the need for electives is not so great as is that of students specializing in a narrower subject-matter field.

Since the agronomy curriculum usually provides for those students planning to become plant specialists, and frequently those specializing in soils, there is a greater necessity for requiring of them more work in the sciences than is required of the student who is to teach agriculture in elementary or secondary schools. This justifies the 4.1 per cent which tables show has been taken from the sciences.

That the remaining 2.5 per cent must be taken from the nontechnical subjects, already sufficiently low in relative amount, is to be regretted. However, it is more a matter of necessity than of desire. The necessity that this prospective teacher shall be well grounded in agriculture and the sciences underlying it, and also in education, together with the impossibility of obtaining any more from the military, and the need for some leeway in the electives to correct lack of balance due to incidents or accidents, seem to leave no other way open. Fortunately, some of his professional courses are of such a nature that they supply in his preparation a portion of the general culture that may be lost by the omission of 2.5 per cent of the nontechnical work.

With the agronomy curriculum of the land-grant colleges as a standard for the proper distribution of the agricultural college student's work among agriculture, sciences, nontechnical subjects, electives, and military and physical training, we are safe in saying that the distribution of the above classes of work, plus the professional education work, as found in the curricula for the prospective special teacher of agriculture of the land-grant colleges, is well adapted to his needs.

Tables 28 and 29—Distribution of Agriculture. That the land-grant colleges are in comparative agreement upon the distribution that shall be made of the work in agriculture among the various agricultural subjects is shown by the average, median, and mode columns in Table 28.

Of the twelve subjects, these three quantities are identical in four of them, vary only 1 unit in five of them, vary only 2 units in one of them, and are not significant in the other two.

While the range seems rather large in some subjects—e. g., animal husbandry, horticulture, farm engineering, and veterinary—each may be explained upon one or more of three bases—viz.:

First. To character of the agriculture, due largely to geographical location.

Second. To nomenclature—i. e., the grouping of courses of practically the same kind under different titles.

Third. To the different values to be accorded to the semester hour as a unit in the different institutions.

On the first basis Nebraska might as easily justify her four hours for horticulture as could Florida her eleven hours.

On the second basis an institution that had no veterinary department would teach animal diseases in its animal hus-

bandry department, thus increasing the number of hours required in that department.

Again, on the nomenclature basis "potatoes" might appear in one institution in the farm crops and in another institution in horticulture. The same would be true of many other subjects, such as plant propagation and plant pathology.

On the third basis it needs only to be noted that in 1917 the range of the number of semester hour credits required for graduation was from 124 to 223, with the median at 157. (Jarvis, United States Bureau of Education Bulletin, 1918, No. 29, p. 96.)

The influence of this in creating high maxima is patent when it is seen that in every one, excepting the professional and elective, the maximum is found in an institution with a semester hour graduation requirement far above the median. (Ibid, p. 94.)

Taking these conditions into consideration, the degree of constancy of the values of these constituent portions of the curriculum provided in the land-grant colleges, as a class, for the prospective teacher of agriculture, is as great as can reasonably be expected.

In Table 29, in which the per cent distribution of these ten agricultural subjects is shown, we have further evidence of the care with which those planning the curricula for this prospective teacher have accomplished their aim.

The outstanding importance of the two fundamental subjects of agronomy (including soils) and animal husbandry (including dairy husbandry and dairying) is shown by their percentages—22.6 and 23.5, respectively. Adaptation to meeting the necessity for "all-round" preparation is shown by the modest, but compulsory, requirements of 11.6 per cent in horticulture, 5 per cent in veterinary, 11.9 per cent in farm engineering, 4.4 per cent in poultry, 5.6 per cent in farm management, 2.3 per cent in genetics, and 12.4 per cent unclassified (but required).

The great necessity for this wide and generous distribution of the time of the student who is preparing to become a special teacher of agriculture over the various subject-matter divisions of agriculture is well known by those familiar with the situation, and can be shown by a report of the commission appointed by the National Education Association of the United States on the Reorganization of the Secondary Curriculum. In this report the main subject-matter courses designated as standard for the better class of high schools are given as farm crops, soils, animal husbandry (including dairy husbandry, dairying, and veter-

inary), horticulture, farm mechanics (engineering), poultry, and farm management. (Report of Commission of the N. E. A. on Reorganization of the Secondary Curriculum; Clarence D. Kingsley, Chairman, Boston, Mass.)

The same report shows the necessity for the special teacher of agriculture being thoroughly trained in education by the work it sets for him to do in the high school, the grades, and the rural schools. It also shows the necessity for his being a man of practical farm experience by the plans stated for community work, laboratory work, work on the school land, and the conducting of home projects. In view of the need, the distribution of agricultural instruction among the standard subdivisions of agricultural subject-matter in the curriculum for special teachers of agriculture has been wisely made in the land-grant institutions as a class. The degree to which the land-grant colleges recognize these needs and the degree to which they are endeavoring to meet them is shown in part by the careful distribution made of the contents of the curriculum of the special teacher of agriculture as found in Tables 24 to 31, inclusive, and the interpretations relating thereto.

Tables 30 and 31—Education Distribution. That the characteristic of constancy in the number of semester hours of education required of the prospective teacher of agriculture in the land-grant college is very marked, is shown by the correlation between the averages, medians, and modes in Table 30. Of the six sets of numbers (excluding unclassified), the variation of average, median, and mode is zero in one set and only 1 unit in the other five sets, while even in the unclassified the variation is only 2 units. This shows a high degree of constancy in the semester hours devoted to the various professional subjects in this curriculum of this student.

The range is not so gratifying; but a study of local conditions, if it could be made, might reduce the apparent adverse significance of this. For example, the fifteen hours' maximum of practice teaching is in a state where full college credit is given for an entire semester's work which the prospective teacher does in a high school removed from the locus of the campus. If the student is to spend this amount of time this way, not much less credit could well be allowed him with fairness.

In Table 31 the percentage distributions of the six educational subjects, plus the unclassified, shows some interesting relations. The highest is held by courses in methods at 21.2 per cent, while psychology and practice teaching tie for second position at 18.8 per cent each. Theory, includ-

ing principles, with 13.9 per cent, falls behind; administration, still further behind, with 10.8 per cent; and history of education, a poor last, with 5.8 per cent.

From an examination of the course descriptions in the catalogs one sees why the unclassified per cent is so large. There are many courses that are composite, containing a mixture of theory, methods, administration, and history. This is particularly true in those institutions which offer a very limited number of courses in agriculture education, and, therefore, include within one course topics that other institutions, differentiating more carefully, place in separate courses.

This table seems to support the view that the agricultural education departments of the land-grant colleges tend to emphasize particularly those courses which aim to give specific preparation to enable this student to function as a teacher. This is evidenced by the large percentage of time devoted to methods and to practice teaching, courses dealing directly with the actual teaching operations rather than with the general theories of education and history of education, which seem to be more remote from the immediate needs of the teacher.

This conclusion would at first thought seem to be neutralized by the very high percentage of time devoted to psychology. To properly interpret the significance of this high percentage of psychology we must remember three very definite and indisputable facts.

First, the very great degree to which psychologists have in the recent past demonstrated the scientific and also the practical character of the modern type of psychology;

Second, the attitude of mind which students in colleges of agriculture develop of placing a high value upon scientific sanctions for practical processes; and from these two the

Third, the desire of this student that his functionings as a teacher shall not only be practically sound from the standpoint of agricultural practice and of classroom practice, but shall also be scientifically sound from the standpoint of agricultural science and of psychological science.

From this point of view the three high-percentage subjects in Table 31 support the belief that the curricula of the land-grant colleges have placed with approximate correctness the relative emphasis upon the various subdivisions of the educational part of the curriculum.

Satisfactory as this distribution may appear, how do we know that it is the correct distribution? We do not.

There are no unquestioned standards in the United States fixing the percentage which the professional educational subjects should constitute of the entire college curriculum, nor are there any standards fixing the exact distribution which should be made of various kinds of professional educational courses within that field.

Specialists in education are prone to magnify and specialists in subject-matter to minimize the percentage of the curriculum that should be devoted to professional work. Specialists in particular fields of educational work are disposed to overemphasize the relative importance of their own specialties.

The Federal Board for Vocational Education recommends that 10 per cent of the four-year college curriculum be professional (Bulletin No. 13, p. 25), and mentions certain subjects as suitable to be included, but does not make any percentage or time distribution of them (Bulletin No. 27, p. 21).

The rules and regulations for certificating teachers in the various states make certain requirements (Updegraff, Harlan, United States Bureau of Education Bulletin, 1911, No. 18), and various associations and individuals have expressed opinions.

With such uncertainty or lack of standards, how can the work of the land-grant institutions be properly evaluated in this particular? Evidently not by comparison with fixed standards, since they do not exist.

In lieu thereof probably the surest means of establishing the appropriate correctness of the distribution of the professional subjects is to be found in the circumstances under which the curriculum and the educational distribution have been developed in the land-grant institutions.

In Chapter II it was shown that the curricula were largely chosen by those who taught the education, frequently with the aid of members of the faculties and administrative officers of the colleges of agriculture and education.

In Chapter III it was shown that of the men teaching the education courses to these students, 81 per cent were born on the farm, 85 per cent were experienced in teaching in elementary or secondary schools, and 35 per cent had been educated in both agriculture and education to the equivalence of at least a bachelor's degree in each; while 62 per cent of the land-grant institutions have at least one man on the education faculty who has this excellent double preparation, and that of the remaining 38 per cent of the institutions, 14 per cent had one man or more in each institution with at least the equivalence of the bachelor's degree

in education, and also one man or more with at least the equivalence of a bachelor's degree in agriculture, making a total of 76 per cent of the institutions that are provided with men specially prepared in both education and agriculture.

When, in addition to these conditions, the close relations that have been shown (Chapters II and III) to exist between the departments of agricultural education and the colleges of agriculture are recalled, is it not safe to conclude that curriculum distributions evolved under these influences are probably sufficiently sound to need no other verification? To put it affirmatively, a distribution of the professional studies in a curriculum designed to prepare special teachers of agriculture in the land-grant colleges which has been evolved by forty-one sets of men in as many different states who were largely reared on the farm, educated in the elementary and secondary schools and in colleges of agriculture and education, experienced in teaching in elementary and secondary schools and in colleges of agriculture and education, and who are responsible for the proper preparation of this teacher, is more likely to be adapted properly to the fulfillment of its purposes than is any distribution that might be supplied from extraneous sources.

SECTION 3.—CONCLUSIONS DEDUCED FROM SECTION 1 AND SECTION 2

The facts stated and the interpretations made in Sections 1 and 2 point to the following conclusions:

1. That the land-grant colleges, as a class, provide a specified curriculum which is required of those who are preparing to become special teachers of agriculture.

2. That the distribution of this curriculum over the various fields of knowledge described as technical agriculture, sciences, nontechnical, professional, elective, and military and physical training is adapted to giving to the prospective special teacher of agriculture the broad and diversified preparation he so much needs.

3. That this curriculum gives as full preparation in agriculture as does that provided for the student who is to enter upon farming or upon scientific work in technical agriculture.

4. That the distribution of the work in technical agriculture among the various divisions of agricultural subject-matter is as constant as differences in nomenclature and differences in agricultural conditions justify.

5. That the conditions under which the professional educational work of this curriculum have been evolved war-

rant the belief that in the relative portion of the curriculum devoted to the professional subjects, and in the percentage distribution of the various educational subjects within the field of education, this curriculum is as nearly correct as can be attained at this time.

The foregoing seem to warrant the general conclusion:

6. That the land-grant colleges, as a class, are making sound provisions for the successful preparation of special teachers of agriculture so far as curricula contribute to such success.

CHAPTER VI

THE PRACTICE-TEACHING WORK OF THE PROSPECTIVE TEACHER OF AGRICULTURE

Section 1. The facts regarding where practice teaching is done, who does it, how much is required, what are the prerequisites, who sanctions entering upon it, who supervises it, who constitute the practice classes, what is taught, and how the practice-teaching work is conducted.

Section 2. Interpreting the significance of the facts in Section 1.

Section 3. Conclusions drawn from Sections 1 and 2.

SECTION 1.—THE FACTS

Where Practice Teaching is Done.—The questionnaire designated several different kinds of schools in which practice teaching might be done, and ask in which of these the institution practiced, and also asked that any other kind of school used be named and the plan described.

The summary of replies is found in Table 32. (Appendix B, Table E1.)

Table 32—Kinds of Schools in Which Practice Teaching is Done and Number of Land-Grant Institutions Using Each Kind.

<i>Kind of School</i>	<i>Number of Institutions</i>
Subcollegiate courses at College of Agriculture.....	16
Local High School	15
Apprentice School (P. T. spends entire time for long period).....	12
Special High School at College of Education.....	8
Near-by High School (not local).....	6
Near-by Vocational High School.....	1
Freshman Class College of Agriculture.....	1

Combining the single replies with those to which they are properly related and converting the number of institutions to the percentage basis gives the relations shown in Table 33.

Table 33—Percentage Which Each Kind of Practice School is of the Total Number of Practice Schools.

<i>Kind of School</i>	<i>Percentage</i>
At College of Agriculture.....	28
Local High School	26
Apprentice School	22
At College of Education	14
Near-by (not local) High School.....	10
Total	100

The replies show that many institutions use more than one kind of school for practice-teaching purposes. (Appendix B, Table E1.) To what extent this is done is shown in Table 34.

Table 34—Number of Institutions Using the Given Number of Kinds of Schools in Which to Do Practice Teaching.

<i>Number of Different Kinds of Schools Used</i>	<i>Number of Institutions Using</i>
Using 4 kinds -----	1
Using 3 kinds -----	4
Using 2 kinds -----	5
Using 1 kind -----	33
Not reporting -----	5
Total -----	48

Grouping these into institutions using only one and those using more than one and expressing the results in per cents give results shown in Table 35.

Table 35—Percentage of Institutions Using Only One Kind of Practice School and of Those Using More Than One.

<i>Using</i>	<i>Per Cent of Institutions</i>
Only one -----	77
More than one -----	23

Who Does the Practice Teaching.—The replies to the questionnaire regarding exemptions from practice teaching of those preparing to become special teachers of agriculture are shown in Table 36. (Appendix B, Table 2.)

Table 36—The Number of Institutions Requiring Practice Teaching of Those Who Are to Become Special Teachers of Agriculture and the Conditions Earning Exemptions.

<i>Required</i>	<i>Number of Institutions</i>
Of all unqualifiedly -----	34
All but those showing successful teaching experience -----	6
All but those showing successful agricultural teaching experience -----	2
Not required -----	0
Not reporting -----	6
Total -----	48

Converting these numbers into percentages, the results are shown in Table 37.

Table 37—The Percentage Which Each Type of Requirement is of the Whole Number of Institutions Reporting on Practice-Teaching Requirement.

<i>Type of Requirement</i>	<i>Per Cent of Institutions</i>
Required of all unless exempt for experience----	81
Exempt for experience, general-----	14
Exempt for experience, agricultural -----	5
Total -----	100

Whether the practice teaching required of the experienced practice teachers is the same in type as that required of the inexperienced is shown in Table 38. (Appendix D, Table E2.)

Table 38—Variation of the Type of Practice Teaching for the Experienced Teacher.

<i>Is Type of Practice Teaching Same for Experienced as for Inexperienced?</i>	<i>Number of Institutions</i>
Yes -----	11
No -----	5
Yes, unless agricultural teacher -----	1
Not replying -----	31
Total -----	48

The few replies to the question of how the amount required of experienced teachers differed from that required of inexperienced were as follows: Classes adapted to inexperienced and experienced teachers; less apprentice work required of experienced teachers; for the inexperienced the supervisor plans more assignments; more specific; depends on experience to meet personal needs of student; more advanced.

Whether the practice teaching required of the experienced practice teacher is the same in amount as that required of the inexperienced is shown in Table 39. (Appendix B, Table E2.)

Table 39—To What Extent the Amount of Practice Teaching is the Same for Experienced and Inexperienced.

<i>Is Amount of Practice Teaching Same for Experienced as for Inexperienced?</i>	<i>Number of Institutions</i>
Yes -----	5
No -----	11
Yes, unless agricultural teacher-----	1
Not replying -----	31
Total -----	48

Those institutions stating the way in which the amount of practice teaching for the experienced teachers differs from that for the inexperienced reported the following—

viz.: Varies (4); half time; maybe for shorter time; less is required or advised; decided on merits of individual case; depends on experience of teacher; about 85 per cent of amount of inexperienced; approximately one-half; less apprentice and more advanced. Some state that no experienced teachers have yet applied. This last condition probably accounts also for the large number who make no reply regarding the differences between the amount required of the experienced and of the inexperienced practice teachers.

Amount of Practice Teaching and the Amount and Kind of Observation Required.—The questionnaire asked for the number of college credits which must be earned in practice teaching, the number of teaching exercises and of observation lessons required in addition to the teaching exercises. The facts found in the replies constitute Tables 40, 41, and 42. (Appendix B, Table E1.)

Table 40—Number of College Credits (Semester Hours) Required in Practice Teaching and the Number of Institutions Making the Requirements.

<i>Credits Required</i>	<i>Institutions</i>
15 -----	1
8 -----	1
6 -----	3
5 -----	3
4 -----	7
3 -----	14
2 -----	7
1 -----	3

Table 41 deals in the same manner with the number of teaching exercises required.

Table 41—Number of Teaching Exercises Required and the Number of Institutions Making This Requirement.

<i>Teaching Exercises Required</i>	<i>Number of Institutions</i>
90 -----	1
80 -----	2
60 -----	2
50 -----	2
45 -----	2
36 -----	3
35 -----	1
32 -----	1
30 -----	2
24 -----	2
20 -----	3
15 -----	1
12 -----	1
10 -----	1

In the same manner Table 42 shows the number of observation lessons required in addition to the teaching lessons.

Table 42—Number of Observation Lessons Required in Addition to the Teaching Lessons and the Number of Institutions Making the Requirement.

<i>Observation Lessons Required</i>	<i>Institutions</i>
50 -----	1
25 -----	1
20 -----	2
18 -----	1
15 -----	2
12 -----	2
10 -----	3
9 -----	1
8 -----	1
6 -----	1
4 -----	1
3 -----	1

Table 43 is a consolidation of the characteristics of Table 40.

Table 43—Showing the Maximum, Average, Median, Mode, Minimum, Total, and Number of Institutions for the Credits Required in the Land-Grant Colleges of Those Preparing to Become Special Teachers of Agriculture.

<i>Items Required</i>	<i>Number of Credit Hours</i>
Maximum -----	15
Average -----	3
Median -----	3
Mode -----	3
Minimum -----	1
Total -----	143
Number reporting -----	39

The extent to which the observation lessons were conducted in classes taught by expert, or at least competent, teachers is shown by the replies to be as follows: All lessons in eleven institutions; two-thirds of them in three institutions; one-half of them in six institutions; most of them in four institutions. This shows 100 per cent of the institutions conducting from one-half to all of these observation lessons in classes taught by experienced teachers. Of the twenty-six institutions reporting definitely, the number of observation lessons that were conducted in classes taught by their fellow teachers, one-half was reported by five institutions, one-third by four, few by five, none by twelve. Those definite or not reporting numbered twenty-two.

Prerequisites for Undertaking Practice Teaching.—The questionnaire contained twelve double questions to ascertain

the scholastic, physical, mental, and moral standards required before the student was permitted to enter upon practice teaching. This was intended to discover to what extent these institutions have utilized definite, accurate, and officially required standards in addition to those general sanctions of doing passing work as a student, not being physically seriously incapacitated and having a sufficient moral standing to remain a member of the student body.

Many replies to the questionnaire stated that they had certain standards; but when the standards were described, it was apparent that they had only the conventional sanctions that usually prevail in educational institutions in the United States and that doubtless prevailed in the land-grant institutions that answered the same questions in the negative.

In tabulating the replies, unless an institution gave evidence of having some more definite and official requirement than the ordinary sanctions mentioned above, it was classed with those without special standards.

The replies are so nearly unanimously negative that tables are unnecessary for an understanding of the facts. It seems safe to assume in these questions that if the blank in the questionnaire were left blank it is equivalent to a negative reply, and the data have been so treated. (Appendix B, Table E4.) Regarding a scholarship standard, only three of the forty-four institutions returning questionnaires seem to have such a standard—viz., Arkansas, which reports a grade of B; Montana, which reports 85 per cent; and Florida, which reports a minimum of 75 per cent and an average grade of 85 per cent. No information was obtained from catalog or other sources to show that this was a special requirement for entering upon practice teaching and not a general educational requirement of the college, though from the questionnaire replies it is to be understood as being a special requirement. The special standards in agriculture and in education are on about the same basis as is that of general scholarship and subject to the same interpretation.

The requirement for apprentice teaching as a prerequisite to practice teaching is scarcely more general, being found in only three of the institutions, California reporting no definite amount; Minnesota, three months; and Mississippi, three weeks. The Minnesota outline explains that the three months is to be spent in apprentice teaching and observation work. The apprentice teacher aids the regular teacher with board work, apparatus, quizzing, paper marking, laboratory and lesson materials, lesson plans, care of notebooks, reports, demonstrations, special assistance to

students needing aid, physical conditions of room, and in emergency takes temporary charge of the class.

The requirement of doing observation work before beginning is much more general, as it exists in twenty-nine of the forty-four institutions returning questionnaires. The amount of time devoted to observation work in the institutions was mentioned in only a few of the replies, which show two hours, ten lessons, eighteen lessons, five lessons, three months, ten hours, three weeks, four lessons, three recitations, five recitations, and six weeks, respectively.

The reports show practically no special physical or moral standards beyond the common sanctions already mentioned, though in moral standards New York mentions the requiring of references; Michigan, testimonials; and in physical standards Maryland mentions medical examination. Mental or intelligence tests are practically unused as a prerequisite for entering upon practice teaching, excepting in Colorado, where the army tests are reported as being used for this purpose, and in Kansas, which reports planning to use intelligence tests next year, while North Carolina reports some tests in educational psychology.

Practical teaching tests as a prerequisite for entering upon practice teaching are very seldom used. This is also true of special other tests, though Massachusetts mentions practical teaching tests as being used "at schools in which apprentice is working," and under special tests North Carolina mentions "questionary similar to those used in vocational guidance."

The data regarding "the classes from which students are eligible to undertake practice teaching" furnish the material for Table 44. (Appendix B, Table E4.)

Table 44—Classes from Which Students May Enter Upon Practice Teaching.

<i>Classes</i>	<i>Frequency</i>
Freshman -----	0
Sophomore -----	0
Junior only -----	0
Junior and Senior -----	1
Junior, Senior, and graduate -----	9
Senior only -----	8
Senior and graduate -----	19
Graduate only -----	0
Not reporting -----	11
Total -----	48
(Summary)	
Junior and above -----	37
Senior and above -----	27
Graduate -----	28

For the purposes of comparison, Table 44 contains the data gathered in 1917 from 163 collegiate teacher-training institutions listed in the United States Bureau of Education Directory. (A. R. Mead, *Eighteenth Year Book*, National Society for the Study of Education, pp. 292, 293.)

Table 45—Showing the Classes from Which Practice Teachers May Come in 163 Collegiate Institutions in the United States (Eighteenth Year Book).

<i>Classes</i>	<i>Number of Institutions</i>
Freshman -----	1
Sophomore -----	9
Junior -----	28
Senior -----	92
Combination fifth year -----	9
Graduate -----	24

Who Sanctions Permission of Student to Undertake Practice Teaching.—The questionnaire replies to this inquiry are classified in Table 46 below, showing conditions in the land-grant colleges. (Appendix B, Table E5.)

Table 46—Who Sanctions Permission of Student to Undertake Practice Teaching.

<i>Persons</i>	<i>Frequency</i>
Professor of Agricultural Education-----	11
Department of Agricultural Education-----	6
Head Department of Agricultural Education-----	4
Dean of Education -----	3
Head Department of Agricultural Education and Supervisor of Teacher Training -----	2
Instructor in Charge of Student Teaching-----	2
Department of Agricultural Education and Local School Authori- ties -----	2
Professor of Agricultural Education and Head of Department of Education -----	2
Department of Agricultural Education and Agent of State Board	1
Professor of Agricultural Education and Dean of Agriculture----	1
Professor of Agricultural Education and Dean of Education-----	1
Professor of Agricultural Education and Dean-----	1
Professor of Agricultural Education and Director-----	1
Professor of School Supervision -----	1
Not reporting -----	10
Total -----	48

(Summary)

Persons in Department of Agricultural Education only-----	23
Same persons jointly with others-----	9
Total -----	32
Dean of Education -----	3
Grand total replies -----	35

Again to make possible a comparison between the practices in the land-grant colleges and those in collegiate institutions in general in the United States, the table compiled by Mead (Eighteenth Year Book Society for the Study of Education, p. 311) is given in Table 47.

Table 47—Who Sanctions Practice Teacher in Colleges in General.

<i>Person Sanctioning</i>	<i>Frequency</i>
Head of Department of School.....	74
Instructor in Education	29
Principal of Training School.....	36
Regular Teacher	14
Superintendent of Schools	27
Board of Education	5
President of College	11
Head of Collegiate Department.....	35
Instructor in Collegiate Department.....	13
Other persons	13

Who Acts as Critic of the Practice Teaching.—In this part of the questionnaire an effort was made to furnish opportunity to designate carefully the exact relationships of the critic to the institutional organization.

The extent to which the persons doing practice teaching were a part of the various college administrative units is shown in Table 48. (Appendix B, Table E5.)

Table 48—Who Acts as Critic Teacher of the Students Preparing to Become Special Teachers of Agriculture While in the Land-Grant Colleges.

<i>Person Acting is Member of Staff of</i>	<i>Number of Institutions in Which They Act</i>		
	<i>Alone</i>	<i>With Others</i>	<i>Total</i>
Agricultural Subject-Matter	0	3	3
General Education	1	6	7
Agricultural Education	14	15	29
Training School	0	12	12
Agriculture and General Education.....	0	0	0
Agriculture and Agricultural Education.....	0	3	3
Agriculture and Training School.....	0	1	1
General Education and Training School.....	0	1	1
General Education and Agricultural Education	2	5	7
Agricultural Education and Training School..	2	3	5
Not replying			10

The total number of persons who supervise the practice-teaching work of these students and the number of institutions utilizing the different number of persons for that purpose are shown in Table 49. (Appendix B, Table E5.)

Table 49—Showing the Number of Institutions Employing the Different Number of Persons in the Supervision of Practice Teaching of the Students Preparing in the Land-Grant Colleges to Become Special Teachers of Agriculture.

<i>Employing</i>	<i>Number of Institutions</i>
5 persons -----	2
4 " -----	1
3 " -----	5
2 " -----	13
1 " -----	12
Not replying -----	15

Table 50—Maximum, Average, Median, Mode, and Minimum Total and Number Reporting of Table 49.

Maximum -----	5
Average -----	2
Median -----	2
Mode -----	2
Minimum -----	1
Total -----	66
Reporting -----	33

In a further effort to learn whether the supervision of practice teaching, the critic work, is in the charge of those making a specialty of training the teacher in the technique of his teaching or of those whose interests were mainly in other fields, such as subject-matter, a request was made in the questionnaire for a report on the amount of time each critic devoted to practice teaching and the nature of the work to which he devoted the remainder of his time. (Appendix A.)

Of the forty-four institutions filling some parts of the questionnaire, only sixteen institutions attempted to furnish this information. This information is tabulated in Table 51. (Appendix B, Table E6.)

Table 51—*Institutions, Fractional Part of the Time of Each Critic Devoted to Practice, and Character of Critics' Other Duties.*

<i>Institution</i>	<i>Critic</i>	<i>Fraction</i>	<i>Other Duties</i>
Georgia -----	A	$\frac{1}{2}$	Improving teachers in service
	B	all	
Illinois -----	A	$\frac{1}{4}$	Senior Courses in Agriculture
	B	$\frac{1}{4}$	Senior Courses in Agriculture
	C	$\frac{1}{4}$	Senior Courses in Agriculture
	D	$\frac{1}{4}$	Senior Courses in Agriculture
Iowa -----	A	?	Special Methods
Kentucky -----	A	2-5	Educational Psychology and State Supervision
Louisiana -----	A	$\frac{1}{4}$	Subjects in Agricultural Education
Michigan -----	A	all	
Minnesota -----	A	$\frac{3}{4}$	Methods
	B	$\frac{1}{2}$	Visual Instruction
	C	$\frac{1}{8}$	Courses in Agricultural Education
Mississippi -----	A	1-3	High-School Agriculture
New Mexico -----	A	$\frac{1}{4}$	Education
Ohio -----	A	$\frac{1}{4}$	$\frac{1}{2}$ Teaching and $\frac{1}{2}$ Project and Community Work
	B	$\frac{1}{4}$	$\frac{1}{2}$ Teaching and $\frac{1}{2}$ Project and Community Work
	C	$\frac{1}{4}$	$\frac{1}{2}$ Teaching and $\frac{1}{2}$ Project and Community Work
Pennsylvania ---	A	$\frac{1}{2}$	$\left\{ \begin{array}{l} \frac{1}{4} \text{ Training Teachers in Service} \\ \frac{1}{4} \text{ Agricultural Education in College} \end{array} \right.$
	B	$\frac{1}{2}$	Same as A
South Carolina--	A	1-3	Education Courses
	B	$\frac{1}{2}$	Education Work
Texas -----	A	$\frac{1}{2}$	Agricultural Education Teaching
	B	$\frac{1}{4}$	Technical Agriculture
Virginia -----	A	1-5	Teaching Agricultural Education and Supervising Teachers in Service
	B	1-5	Same as A
	C	$\frac{1}{4}$	Teaching Agriculture in High School
	A	1-6	Teaching and State Supervision
West Virginia---	B	$\frac{1}{8}$	Same as A
	C	$\frac{1}{2}$	Teaching in Training School
	A	$\frac{1}{8}$	Teaching Agricultural Education and Training in Service
Wisconsin -----	B	$\frac{1}{8}$	Teaching Agricultural Education and Agronomy
	C	$\frac{1}{8}$	Teaching Agricultural Education and Teaching Animal Husbandry
	D	1-16	Administering High School

Whom the Practice Teacher Teaches.—The composition of the classes which the practice teacher observes was well reported in the questionnaires, and the total of each kind is given in Table 52. (Appendix B, Table E7.)

Table 52—Showing the Composition of Classes Used for Observing and the Number of Institutions Using Each Kind.

<i>Class Composed of</i>	<i>Number of Institutions</i>
Elementary pupils -----	5
Secondary pupils -----	36
Fellow practice teachers -----	17
Other college students -----	6

Equally full replies were received regarding the composition of the classes which the practice teacher teaches. (Appendix B, Table E7.) This is shown in Table 53.

Table 53—Showing the Composition of Classes Which the Practice Teacher Teaches.

<i>Class Composed of</i>	<i>Number of Institutions</i>
Elementary pupils -----	3
Secondary pupils -----	35
Fellow practice teachers -----	6
Other college students -----	4

Does the Practice Teacher Teach Agriculture?—In response to this question, all institutions answering this portion of the questionnaire (36) replied "Yes," of which number five added that at times he may also teach related sciences. (Appendix B, Table E8.)

What Agriculture Does the Practice Teacher Teach?—The replies, when classified as in Table 54, show the frequency of the most important subdivisions. (Appendix B, Table E8.)

Table 54—What Agriculture the Practice Teacher Teaches.

<i>Subject</i>	<i>Number of Institutions</i>
Agronomy -----	22
Horticulture -----	18
Animal Husbandry -----	16
Poultry -----	12
Farm Management -----	5
Farm Engineering -----	3
Institutions replying definitely as above -----	25
Institutions replying indefinitely -----	6
Institutions not replying -----	17

How Many Agricultural Subjects Must the Practice Teacher Teach?—Replies to this question were made by twenty-five institutions, of which seventeen said in one subject, seven in two subjects, and one in five subjects (Appendix B, Table E8); while the twenty-one institutions reporting on the number of subjects in which the student usually taught showed nine institutions in which he taught one subject, eleven in which he taught two subjects, and one in which he taught five subjects (Appendix B, Table E8).

Who Decides in What Subjects the Practice Teacher Shall Teach?—Of the twenty-one institutions replying, fourteen showed this authority was placed in the hands of the member or members of the department of agricultural education, while the other seven were scattered (Appendix B, Table 8) as follows—viz.: Two to “the practice teacher and the critic,” and one each “course of study,” “program,” “supervisor and local teacher,” “dean of agriculture and professor of agricultural education,” and “school where work is done.”

Determination of General Content of Course Taught by the Practice Teacher.—In response to the inquiry as to who determines the general content of the course taught by the practice teacher, seventeen institutions designated the person or persons in the department of agricultural education in charge of the practice teaching as having this authority.

No other one authority approached this in number, the nearest approach being the instructor in charge of the secondary course, which was reported by three institutions.

Two institutions reported the teacher who was in charge of the technical subject-matter, and two others that it was determined by the state course of study. The other thirteen were scattered, one each among many different combinations, representing peculiar local systems of organization. (Appendix B, Table E9.)

Determination of the Content of the Day's Lesson.—These replies showed a strong tendency to center at two points, the teacher in charge being reported from thirteen institutions, and the teacher in charge in conjunction with the student teacher reported by the same number of institutions; while the nearest approach to these was a combination of student teacher, teacher in charge, and critic teacher, reported by three institutions. The remaining five were scattered.

Who Make the Lesson Plans.—The information as to the distribution of lesson-plan making between the student teacher and the critic teacher are shown in Table 55.

Table 55—Lesson-Plan Makers.

<i>Lesson Plans are Made by</i>	<i>Number of Institutions</i>
Practice teacher, only -----	8
Critic teacher, only -----	0
Both -----	26

The information showing who observes the practice teacher teach and who criticizes his teaching are shown in Table 56.

Table 56—Who Watches the Practice Teacher Teach and Who Criticizes His Teaching.

	<i>Number of Institutions</i>	
	<i>Watches Practice Teacher</i>	<i>Criticizes Practice Teacher</i>
Fellow practice teachers-----	24	21
Critic teacher -----	34	36
Both -----	24	21
Others -----	14	9

Kinds of Conferences on Practice Teaching.—The number of institutions utilizing the various kinds of conferences is shown in Table 57. (Appendix B, Table E9.)

Table 57—Kinds of Conferences Used with Practice Teachers.

<i>Kinds</i>	<i>Number of Institutions</i>
General -----	29
Individual -----	34
Before class (recitation) -----	23
After class (recitation) -----	28
Institutions reporting -----	36

SECTION 2.—INTERPRETATION OF SECTION 1

Tables 32 and 33—Kinds of Schools in Which Practice Teaching is Done.—These tables reveal that 42 per cent of the institutions do practice teaching in schools at the institution, of which two-thirds (28 per cent) are at the college of agriculture and one-third (14 per cent) at the college of education. The next in order of importance as a place for practice teaching is at the local public high school (26 per cent), which ranks below the number of college of agriculture schools, but above the number of college of education high schools. Close to this is the use of apprentice schools—that is, where students work continuously for a somewhat extended period as helpers to the regular teachers (22 per cent); while the school ranking lowest is the near-by, but not local, high school. The 42-per-cent institutional secondary schools have distinct advantages in convenience, agricultural equipment, and atmosphere, and, when located at the college of agriculture, of a student body specially interested in the subject. However, they lack some of the normal characteristics of a village, town, or country high school, with its agricultural surroundings and constituency and its opportunities for practice in those forms of teaching that are outside of the school buildings and dependent upon the presence of an actual farming community.

In attempting to approximate ideal conditions for practice teaching, most institutions find themselves in a di-

lemma, the horns of which are difficulty of administration and abnormality of conditions. If the institutional school plan is chosen, it has all the conveniences of ease of arranging the practice teachers' programs, the possibility of the student continuing his other studies, the continuity of living conditions for practice teachers and critics, the possibility of the critic teaching other courses also, the utilization of several members of the faculty for critic work while all carry other courses, and the economy to the institutions and the students and the critics in both time and money.

If the plan of utilizing a more remote high school in a rural community is chosen, it has the advantages of typical pupils, equipment, school program, community and official relationships.

In most institutions it is practically impossible to take advantage of all of the benefits of both plans, though some institutions are giving the student part of his practice under one plan and part under the other, as will be shown subsequently.

The degree to which an institution can obtain the largest share of the benefits of both plans, with the smallest share of the disadvantages of both, depends upon local conditions, such as curricula, location of schools, and conveniences of travel, and also upon the ingenuity of those in charge of the administration of agricultural education and the extent to which institutional officers and public-school officers are willing to coöperate with them.

That some schools have succeeded in obtaining many of the benefits of more than one plan is shown by the data in Tables 34 and 35.

Table 34—Number of Kinds of Schools in Which Institutions Do Practice Teaching. In this table it is seen that almost one-fourth of the schools replying report practice in more than one kind of school, while almost one-eighth practice in three or more kinds of schools. From this it seems that an effort is being made to solve this problem by trying the various possibilities.

Tables 36 and 37—Who Does Practice Teaching. From these tables it is plain that of all the institutions replying, none excuse the prospective special teacher from practice teaching, excepting that eight institutions (19 per cent) may excuse him if he has had successful teaching experience, though one-fourth of these require that his experience must have been in teaching agriculture. This practically universal insistence that the special teacher of agriculture shall have had experience in teaching, either actual or under supervision, before he is recommended as

prepared to enter upon the actual teaching of agriculture, is evidence that the land-grant colleges are endeavoring to prepare this student in a practical manner for his duties as a teacher of agriculture.

Tables 38 and 39—Variation in Practice Teaching for Experienced. That some progress has been made in differentiating the amount and character of the practice teaching required of the experienced and inexperienced teachers appears in Tables 38 and 39. Assuming negative replies from those not reporting, it is evident that very few institutions have yet endeavored to make any material differentiation in either the amount or character of the practice teaching done by experienced students. This is confirmed by some in the statement that no experienced teachers had yet presented themselves for this work.

Some intelligent efforts to establish bases of differentiation in type are found in the replies from Alabama, Illinois, Minnesota, Mississippi, Texas, Vermont, and Wyoming, as quoted below Table 38, and in amount in the quotations from Michigan, Minnesota, Mississippi, North Carolina, West Virginia, and Wyoming, shown in the paragraph following Table 39.

The conclusions deducible from these tables are that up to the present only a few of the institutions exempt any students from practice teaching; but of those requiring experienced teachers to take practice teaching, there are a few who are endeavoring to adapt the kind and amount to the need of this experienced student on the basis of his experience.

Tables 40, 41, 42, and 43—Amount of Practice Teaching and Observation. For purposes of discussion, Table 43 furnishes the basis of the reply to the question of the amount of practice teaching required. While the range is very wide, extending from a minimum of one hour to a maximum of fifteen hours, as measured in semester-hour credit, that the institutions are in substantial agreement as to the proper number of credit hours is shown by the entire coincidence of the medians, averages, and modes at three hours with thirty-nine institutions reporting. There is much greater divergence, however, in the number of teaching exercises which the student is required to conduct in order to earn these hours of credit. Neither is this table (41) nor in the one showing the number of observing exercises required (42) is there any central tendency apparent. From this it is easily inferred that there is a strong tendency in the land-grant colleges for the number of college credits to be earned by practice teaching to center about

three semester hours, though there is apparently no tendency as yet to approach a center in the number of teaching exercises to be conducted by the practice teacher nor in the number of teaching exercises which he is required to observe.

Table 44—Kinds of Teaching Observed. In the kinds of teaching which the prospective teacher observes distinguished as those taught by expert or superior teachers and those taught by fellow practice teachers, the institutions are more fully committed to a policy, since 100 per cent of them require from one-half to all of the observation lessons to be in classes taught by the experienced teachers.

Of the twenty-six institutions reporting the number of lessons observed in classes taught by fellow practice teachers also, nearly half of them said "None," while the other approximate half reported from a few to one-half. Though there are certain gains in having prospective teachers observe each other's work, the land-grant institutions are on the safe side in requiring most of the observing to be done in classes taught by superior teachers.

Prerequisites for Practice Teaching.—The purpose of this portion of the questionnaire was to discover the extent to which the land-grant colleges had put into operation, as a prerequisite to practice teaching, absolute, definite, official standards as prerequisites in addition to the conventional sanctions usually found in all teacher-training institutions. The facts show that while the conventional sanctions are probably being observed, very little is being done in requiring special, official, positive, and definite requirements regarding scholarship, physical, moral, mental, or other tests for fitness.

From a study made in 1917 of 163 colleges in general engaged in teacher training in the United States, one might think that the general standard is higher (A. R. Mead, Eighteenth Year Book of the National Society for the Study of Education, pp. 308-310) than in the land-grant colleges. However, when the same tests are applied, the "requirements" in colleges in general seem to be the same conventional sanctions that prevail in the land-grant institutions.

The prerequisite of apprentice work is scarcely any more generally and definitely required. The prerequisite of observation work is much more general, being required in twenty-nine of the forty-four institutions, though the number of observation lessons required has not yet approached standardization.

Tables 44 and 45—From What Classes Practice Teachers Come. A comparison of these tables shows that the regula-

tion of the land-grant colleges in 1918-19 of permitting only students from the most advanced classes to enter upon practice teaching is much superior to the regulations of the colleges in general in the year 1917-18. This is seen in the showing that no land-grant colleges permit any person under junior standing to undertake practice teaching, while in collegiate institutions in general engaged in teacher training there were nine that permitted sophomores and one that permitted freshmen.

Another strong point favoring the land-grant colleges is that 73 per cent of them require that the student shall be at least a senior before he may undertake practice teaching. This enables one to say with confidence that the standard of the land-grant colleges is superior to teacher-training colleges in general in the degree of advancement in the college curriculum which it demands of those who undertake practice teaching.

Tables 46 and 47—The Sanctioning of Entering Upon Practice Teaching. In Table 46 the preponderance of those connected with the department of agricultural education among those who possess the authority to grant permission to the practice teacher to teach is shown by his being the sole authority in 66 per cent of the institutions and joint authority in over 25 per cent more, making him a participant in the sanctioning in over 91 per cent of the institutions.

This shows again in a forceful manner the intention of the land-grant institutions to place this important function in the jurisdiction of those especially prepared and situated to administer it wisely. It is plain from Table 47 that in the year 1917-18 the education faculties in teacher-training colleges in general in the United States were not clothed with so great a degree of authority in this matter as were the land-grant colleges.

Table 48—The Critic Teacher. This table shows that in twenty-nine of the thirty-eight institutions replying the critic teaching is done solely by a person or persons connected with the department of agricultural education. In addition to this, there were persons who were jointly members of the department of agricultural education and other departments in eleven institutions.

It is also interesting to note that in only one institution is critic work permitted to be in the hands of any one who is not a member of a department of agricultural education unless he be aided by others who are members.

This table shows again the predominance of the members of the agricultural education faculty in the practical and essential work of criticizing the practice teaching.

It also indicates a sound condition in that no critic work is allowed to be solely in the hands of teachers of agriculture subject-matter, and in only three institutions do they participate in the responsibility for critic teaching.

Table 49—Number Critics Employed. That the land-grant colleges are well equipped with critic teachers is to be inferred from the fact that about 64 per cent of the institutions have two or more critics, while about 24 per cent have three or more. We have no available data as to the number of students taking practice teaching the past year; but from the fact that juniors, seniors, and graduate students were either in the army or the Students' Army Training Corps (where they were not preparing for teaching) in the first semester and had not returned to college in normal numbers in the second semester, it is easy to believe that the land-grant colleges were equipped to conduct successfully this work so far as the number of critic teachers was concerned.

Table 51—How Much Critic Work the Critic Does, and What Other Work He Does. Only one-third of the institutions reported upon this point, the small number, doubtless, being due to the war and the undetermined assignments of duties of faculty members, due partly to the war and partly to the nascent state of many of the departments of agricultural education.

Of the thirty-four critic teachers reported by the sixteen institutions, two devote their entire time to critic work; one, three-fourths; four, one-half; two, one-third; thirteen, one-fourth; and eleven, less than one-fourth.

Without doubt, war conditions are responsible for the fractions being so small; yet the small amount of the total time devoted by each to practice teaching is not a criticism when we know the character of the work critic teachers are engaged in during the remainder of their time. From Table 51 it appears that twenty are teaching courses in education, of which sixteen are definitely stated to be agricultural education; seven are teaching courses in agriculture; three, doing state supervision; three, community work; two, teaching high-school agriculture; and one each, teaching in training school and administering high school.

Of the forty-four activities, thirty persons are working with teachers during the remainder of their time; nine are teaching agriculture; three are doing community and project work; and two are administering the training school; which, summarized more closely, means that thirty-five are

in the teacher-training activities and nine teaching agricultural subject-matter.

If the nine have been chosen for critic-teaching work because of their pedagogical abilities, as well as for their knowledge of the agricultural subject-matter, the contact they maintain with agricultural subject-matter will serve to vitalize their pedagogical work. It is noticeable that only three institutions have critic teachers who spend the remainder of their time teaching agricultural subject-matter.

Tables 52 and 53—The Observing and the Practice Teaching Classes. These tables show that this prospective special teacher of agriculture has the opportunity to observe secondary classes in thirty-six of the states reporting and to teach them in thirty-five of the states. In addition to these, he can observe elementary pupils in five institutions and teach them in three, while he observes his fellow practice teachers in seventeen institutions and teaches them in six. He also has opportunities to observe in classes of his fellow college students in seventeen institutions and to teach them in four.

As only thirty-eight institutions reported, it is plain that in 95 per cent of the institutions reporting this student observes secondary classes and in over 92 per cent he teaches them. This shows that, so far as the kind of classes observed and taught is concerned, the land-grant colleges, as a class, are furnishing good facilities for observing and practice teaching for the prospective special teacher of agriculture.

What He Teaches.—The fact that all of the institutions report that the practice teacher teaches agriculture, and, in addition that in five of the institutions he may also practice teaching the sciences related to agriculture, is convincing evidence that the land-grant colleges are furnishing the right kind of teaching experience for the prospective special teacher of agriculture so far as subject-matter is concerned. The teaching of related science in addition to the teaching of agriculture is sufficiently common in some schools to warrant its being used in practice teaching.

Table 54—What Agricultural Subjects Are Taught. Agronomy and animal husbandry constitute the first two years of the standard curriculum in agriculture for secondary schools. Unless the remainder of the curriculum be highly specialized, the agronomy would include soils and horticulture, and animal husbandry would include dairy husbandry, dairy manufacturing, and poultry. (Report, N. E. A. Commission on Reorganization of Secondary Curriculum, Agricultural Section.) Table 54 shows that in

selection of agricultural subject-matter for the practice teaching, due attention has been given to the importance of the subject-matter in the curriculum which the practice teacher will be called upon to teach when he becomes a regular teacher. The other influence determining the frequency of the various subjects is the greater adaptability of agronomy and horticulture to classroom procedure and to exemplifying the processes of teaching and of classroom management which the prospective teacher will encounter in his regular teaching work.

The frequency table (54) shows that the land-grant colleges in their practice teaching have placed great emphasis upon the subjects that are most important in the secondary curriculum and that are also superior for practice-teaching purposes. The conclusion is inevitable that the land-grant colleges are doing their practice teaching upon the best possible agricultural subject-matter topics.

Number of Subjects the Practice Teacher Teaches.—That less than 25 per cent of the institutions reporting require the student to teach in more than one subject is unfortunate, but that over 50 per cent usually teach in two or more subjects is more satisfactory. This lack of a more widely spread experience that covers more agricultural subjects is, doubtless, more due to administrative obstacles than to lack of ideals. Since the term for which the critic and his practice teachers must take charge of the practice class is usually the same as that during which the student is scheduled for his practice-teaching experience, and since the practice-teaching class usually devotes its time to only one of the divisions of agricultural subject-matter during that term, the practice teacher's student recitation program makes it difficult to give him the variety of experience which it might be desirable for him to have.

However, what the practice teacher's experience may lack in variety because of these conditions may be fully compensated for by the continuity, coherence, and unity that are to be found in organizing and teaching an entire term's work in one subject. After this thorough experience he will be better prepared to reorganize the other subdivisions of agricultural subject-matter from the collegiate basis upon which he learned it as a student to the secondary basis upon which he is expected to teach it as a regular teacher.

That the number of subjects in which the practice teachers teach in the land-grant colleges is on as sound a basis as is practice teaching in teacher-training collegiate institutions in general is shown by referring to the investigation of the 163 institutions before alluded to (Eighteenth

Year Book, p. 324), wherein it appears that the percentage in the general institutions that practice in one subject only is the same as in the land-grant institutions—viz., 50 per cent.

From these facts it is clear that while in the number of subjects in which practice teaching is done the land-grant colleges have not yet attained the ideal, still they have attained the same standards attained by collegiate teacher-training institutions in general in the United States, and have done so in a much shorter period of development.

Authority Which Chooses the Practice-Teaching Subject.—The predominance of the authority of the agricultural education faculty in this field again illustrates the tendency of the land-grant authorities to recognize the desirability of placing most of the responsibility upon those faculty members specially chosen for this work in order that the preparation of special teaching of agriculture shall be efficiently performed.

This is further supported by the facts regarding the locus of the authority for determining the general content of the course to be taught.

Content of the Day's Lesson.—The facts indicate that the critic teacher and the student teacher are the most active in choosing the content of the day's lesson. Doubtless if there had been space for explanation it would be found that in the institutions reporting this determination to be made by the teacher in charge his determination extended only to the choice of the main topic for the day, while he coöperated with the student teacher in determining the details of the lesson. This interpretation is sustained by the reports showing who makes the lesson plans.

If this be correct, it is apparent that the land-grant colleges have given the necessary latitude to those engaged in teacher training in the matter of selecting the content of the lessons to be taught.

Table 55—Lesson Plan Making. The land-grant colleges make a better showing than do the collegiate institutions, as a whole, in the matter of who makes the lesson plans, as is shown by a comparison of Table 55 with the investigation formerly referred to (Eighteenth Year Book, p. 315), as follows:

Lesson Plans Made by			
	Practice Teacher	Critic	Both
	Per Cent	Per Cent	Per Cent
In land-grant colleges -----	24	0	76
In colleges in general -----	43	27	44

Since the purpose of lesson plan making from the standpoint of the practice teacher is to develop his ability to make lessons plans, as well as to teach from them, the procedure of having the lesson plans made by the critic teacher only is open to condemnation. This criticism cannot be directed against a single land-grant college, while the procedure seems to be followed in 27 per cent of the colleges in general of the United States engaged in preparing teachers.

Without doubt, the most valuable results accrue to all concerned by the coöperation of the practice teacher and the critic in making the lesson plans. If this be true, the land-grant colleges far outrank colleges in general that are engaged in teacher training in the United States, as is shown by 76 per cent of the land-grant colleges following this plan, as against 44 per cent of collegiate institutions in general.

Table 56—Watching and Criticizing the Practice Teacher. There is little to condemn in the procedure of the land-grant colleges in the observation work of the practice teacher or in the criticizing of the practice teaching. All of the institutions reporting follow the custom of the critic teacher watching and criticizing the practice teacher, which is quite to be expected. In addition to the critic teacher, about two-thirds of the institutions reporting allow the fellow practice teachers to observe and to criticize the practice teaching, and a few institutions allow other persons also to do so. From this it would seem that the practice teaching in land-grant colleges is well utilized in these regards to cultivate poise on the part of practice teachers, to insure a full consideration of the character of the practice teaching done, and to enable the practice teacher to improve his technique through a consideration of the practice work of others as well as through his own.

Table 57—Conferences. It is apparent at a glance that in the holding of conferences with practice teachers upon the practice teaching, the land-grant colleges are utilizing generously this means of insuring that practice teaching shall not degenerate into mere rule-of-thumb experience. The figures in this table indicate that in order that each student may have the benefit of suggestions made by the other students and of some of the criticisms offered by the critic to others individually and to the group collectively, twenty-nine of the thirty-six institutions reporting are found to use general conferences; that in order to give each teacher that personal help which is more effective when given in private, thirty-four of the institutions use individual conferences; that in order to be sure that the practice teacher has made proper preparation previous to at-

tempting to teach a lesson, twenty-three institutions hold conferences before the teaching is done; and in order to reap more fully the benefits of the experience acquired in teaching a lesson through considering it critically with another or others, twenty-eight of the institutions hold conferences with practice teachers after the lesson has been taught.

From these considerations it would seem safe to say that the land-grant colleges, as a class, are utilizing to a high degree the conference as a means of improving the quality of their work in practice teaching for the special teachers of agriculture.

In addition to these general facts and interpretations shown above, a more definite conception may be obtained regarding the trend, progress, and prospects of teacher training in the land-grant colleges through specific statements of the plans of several of the land-grant colleges as shown below.

In *California* the high-school principal and the agricultural instructor are constantly supervising the apprentice teacher; and, in addition, the head of the division and the supervisor of teacher training visit the men as often as may be necessary. One critic teacher located in the school of agriculture at Davis (many miles from the university at Berkeley) gives most of his time to the supervision of the practice-teaching work, and the head of the division of agricultural education at Berkeley assists him in so far as it is possible. (Letter, F. L. Griffin, and questionnaire.)

Georgia requires in the course in "Apprentice Teaching" that all students preparing to teach under the Smith-Hughes Act must do apprentice teaching in near-by high schools through the year equivalent to three hours per week. Seniors only are admitted. (Catalog.)

In *Massachusetts* the "apprentice teacher serves as assistant to the head of a department in an approved school selected by the board of education for this purpose. Time, variable." "One apprentice teacher in one department." (Questionary.)

In *Minnesota*, after three months of observation and apprentice teaching, during which the student does prescribed readings and discusses in conferences his progress in observation work and apprentice teaching, and during which a study is made of the teacher's personal equipment for teaching, he enters upon the second quarter (three months), in which he takes charge of a class under supervision. Two months of this may be in the secondary school of agriculture at the college of agriculture, or in the uni-

versity high school at the college of education, or in one of several available local high schools; while one month is to be done in a typical rural high school under the direct supervision of the teacher-training staff of the college. During this quarter of practice teaching, conferences and professional readings continue, and observation work more advanced and specific is done.

To give experience in the other responsibilities which the student is likely to meet in his regular teaching, practice is also given in maintaining a typical "land laboratory" at the university farm.

Typical home and group gardens are maintained on the campus by pupils of the neighborhood school. The conducting of these gardens is required of the practice teacher under the supervision of the critic teacher.

The student teacher also has practice in supervising, under the guidance of the critic teacher, home projects carried on by boys of the neighborhood. In this the same forms and reports are used as are used in the vocational (Smith-Hughes) agricultural secondary schools of the state. (Plans for Teacher Training in College.)

So far as possible the one month of work in the typical high schools has been done during the winter, when, because of the special class of short-course students being present, the assistance of the practice teacher is of greater value, and the practice teacher has the double experience with the regular-course work and also the short-course work. In addition to the critic attention which the practice teacher obtains from the superintendent and the teacher of agriculture in the high school, he receives criticisms from a critic teacher of the department of agricultural education at the college who visits the school for that purpose. Reports are received from the practice teacher and from the superintendent of the school where he does work.

In *New York* "prospective teachers have been placed out as apprentice teachers for one-half year in selected high schools where agriculture is taught."

"The apprentice teacher is placed in a school and given responsibility for one or two classes daily; and, in addition, he assists with the general activities of the department of agriculture in the school. He is required to do a certain amount of professional reading and to make weekly reports to the department of rural education at the college of agriculture. Besides the supervision of the local principal and teacher of agriculture, his work is visited from time to time by representatives of the division of agriculture and industrial education of the state department of education

and by members of the department of rural education of the college of agriculture.

"To further strengthen the work in special methods, a practice and demonstration department of vocational agriculture will be maintained in the high school at Trumansburg. A member of the staff of the department of rural education has been placed in charge of the instruction in this department. Arrangements are made by which students taking the work in special methods are required to spend time in observation of the teaching and project work as it is conducted in the school. Apprentice teachers will be placed in the school as soon as normal conditions make this possible. In addition, the school is used for the purpose of testing out materials and methods of agricultural instruction. At present an experiment is under way which has as its purpose trying out the use of the school plot." (Plans for Training Teachers of Vocational Agriculture.)

"In brief, this work in New York is to be done through coöperation with the state department. First, it is definitely agreed that the teacher-training work shall be separate and distinct from any supervisory work which has to do with administration. It will be our business only to deal with the technique of teaching. Of course, we will point out, with respect to this, needed equipment, but assume no responsibility for pointing out to the board or the superintendent the need of this equipment or urging its purchase. The relations with superintendent and school board will be only such as are needed to explain our relation and to acquire such information as may help us in correcting faults on the part of the teachers. Should we note need of administrative action in our visits, we shall call the attention of the state supervisor to such things as we may note, doing it, however, in an entirely unofficial capacity and because he has requested us so to do for his own benefit.

"We are informed weekly of the itinerary of the supervisor and his assistant for the week. If necessary, this is wired to us. After each visit to agricultural teachers with whom we are concerned, the state supervisor forwards to this office a copy of the letter written by him on his return from the inspection trip. This letter reiterates the points made by him with the instructor on his visit. We have also the plan by which he submits any confidential suggestions or criticisms concerning the agricultural instructor or the local situation. These confidential communications will be placed on a special colored sheet that they may be

safely filed in our office. We shall make similar reports of our visits to the state supervisor.

"It will be necessary for us to go any place where there seems to be special need of help, and also to visit as soon as possible new men starting in their work, spending as much time as possible and necessary with the beginner. Ultimately we hope to have one man engaged exclusively in this field work for a semester, alternating semesters with the other man in the department.

"We shall expect to give personal advice; to indicate lines of reading and study that will help offset particular weaknesses of the men; to require of them certain reports in the nature of lesson plans or similar plans of work for a week or a month ahead; to assign readings and require reports on such readings from them should we see fit. In a general way, these are our plans." (Letter, W. F. Lusk.)

In *North Carolina* the practice teaching is done at a near-by farm-life school, which is eight miles from the college. Some difficulty is experienced because of the class schedule of the students. (Letter, Leon E. Cook.)

In *Ohio* observation teaching follows the course in methods, and that is, in turn, followed by practice teaching. There are three (four or five next year) vocational agricultural departments in high schools in rural communities not more than fourteen miles from the university, which are in charge of instructors in the agricultural education department, who meet the requirements as Smith-Hughes teachers and who are resident teachers in the particular communities where their work is given. Students preparing to teach who pursue the course in observation teaching are required to leave one afternoon at least free from campus duties.

During the term each student must make ten visits to these schools and three to other vocational high-school departments in the state. Conferences of all observing students are held. Practice teaching of three weeks in one of these three schools, under the local teacher as a critic, is required in the practice-teaching course which follows the observation course. The school departments are all vocational, and are reached by electric railroads and automobile bus lines. (Letter, W. F. Stewart.)

In *Vermont* use is made of one school about six miles from Burlington, connected by trolley. Another plan is to put the men out in the late spring and early summer of their junior year for work under the regular teacher. "In this way we can release the regular teachers for some summer-school work which otherwise they could not get,

as practically all of our men are on duty eleven months out of the year; and if men look after their home project work properly, they cannot leave during the month of July and a part of August for summer-school work." (Letter, F. B. Jenks.)

SECTION 3.—CONCLUSIONS DEDUCED FROM SECTIONS 1 AND 2

The foregoing facts and interpretations point to the following conclusions regarding the various phases of practice teaching work in the land-grant colleges:

1. That the land-grant colleges, as a class, have made available for practice-teaching purposes a sufficient number of schools to furnish fairly satisfactory facilities for this work.

2. That the land-grant institutions, as a class, hold themselves responsible for knowing that the prospective special teacher of agriculture can teach by requiring practice teaching of all and through trying to adapt it to the needs of experienced teachers by varying the type and amount according to the characteristics of the previous experience.

3. That the land-grant institutions are in substantial agreement among themselves upon the amount of practice teaching to be done when measured in semester hour credits, but vary greatly regarding the number of exercises to be taught and to be observed.

4. That the land-grant colleges, as a class, require that a majority of the observation exercises shall be in classes taught by superior teachers, but that some may also be in classes taught by fellow practice teachers.

5. That the land-grant colleges, as a class, do not maintain any special, official regulations regarding scholastic, physical, mental, and moral fitness for entering upon practice teaching, excepting such conventional sanctions as are found in collegiate teacher-training institutions in general, including land-grant institutions.

6. That a majority of the land-grant colleges require observation of teaching as a prerequisite to practice teaching.

7. That the land-grant colleges maintain a higher standard than do teacher-training collegiate institutions in general in the degree of advancement in his curriculum required of the student before he can enter upon practice teaching.

8. That the land-grant institutions place great authority in the department of agricultural education for sanctioning the permission of the student to enter upon practice

teaching, for doing the critic teaching, and for selecting the material to be taught.

9. That the land-grant colleges seem to have a sufficient number of critic teachers to properly supervise the practice teaching.

10. That in the land-grant colleges the critic teachers, as a class, are persons fully connected with the professional work of preparing special teachers of agriculture.

11. That the land-grant colleges appear to offer excellent facilities for the observation of classes of secondary grade and additional facilities for the observation of elementary and college classes.

12. That the land-grant colleges require the practice teacher to teach agriculture, and also in some instances permit him to teach the related sciences.

13. That the agricultural topics taught by the practice teachers in the land-grant colleges are the best that can be chosen for properly preparing him to perform his duties as a regular teacher.

14. That the number of subjects in which any one teacher practices is smaller than is desirable; yet it is as great as exists in collegiate teacher-training institutions in general in the United States.

15. That in the responsibility for making the lesson plans the usages in the land-grant colleges are superior to those in colleges in general that are engaged in teacher training.

16. That in the land-grant colleges the observation work, criticism, and conferences of the practice teachers seem to be so utilized as to conduce very largely to proper preparation for regular teaching.

17. That individual institutions of the land-grant colleges are pioneering with apparent success in some features of practice teaching which bid fair to become more generally adopted and to still further improve the efficiency of the preparation of the special teachers of agriculture in the land-grant colleges.

These conclusions and the facts upon which they have been established seem to warrant the general conclusion:

18. That the land-grant colleges are well adapted to the preparation of special teachers of agriculture so far as practice teaching can contribute to that end, since they equal or exceed the teacher-training institutions in general of the United States in the provisions made for successful practice teaching, as is shown by their approximating, as a class, high standards in most of the conditions upon which successful practice depends; and in the few characteristics in which they are not so fully developed a few institutions

have pioneered with success and are evolving procedures that appear to be adapted to further increasing the efficiency of the practice teaching in the land-grant colleges and that are destined to spread to the others as soon as this rapidly evolving teacher-training work has time to develop in them.

CHAPTER VII

TRAINING TEACHERS WHILE IN SERVICE

Section 1. Facts regarding who trains the special teacher of agriculture while in service; visits of college instructors and their reports; teachers' reports; correspondence courses; reading courses; conferences; visits of teachers to other schools; and teachers attending college part time.

Section 2. Interpretation of facts in Section 1.

Section 3. Conclusions from Sections 1 and 2.

SECTION 1.—THE FACTS

The brevity of the period during which the maintenance of agriculture as a subject in the secondary-school curriculum, requiring a specially prepared teacher, has evolved, has made it impossible to develop all the possibilities of teacher training in this field and equally impossible to standardize all those that have been developed.

The numerous and important points of contact which the work of this new department of secondary education establishes and the difficulty of fully preparing the special teacher for his duties in connection therewith during the period of his college course have caused agricultural education faculties to seek to further train their men after they have entered upon regular teaching in the secondary schools.

The inauguration of state supervision of the teaching of agriculture in those secondary schools that are established through the state boards and the federal board created under the Smith-Hughes law raised the question of whether the teachers in service in a state were to receive their training in service from the representative of the state board or of the state institution responsible for the training of agricultural teachers—the land-grant colleges.

That training in service of those individuals who were originally trained in the teacher-training institution of a state is a part of the process of teacher training for which that teacher-training institution is entitled to expend Smith-Hughes funds has been determined by the Federal Board for Vocational Education. (Second Annual Report of the Federal Board for Vocational Education, p. 150.)

To discover the extent to which the land-grant colleges had developed this training in service work was the purpose of Section E of the questionnaire. The information so obtained constitutes the factual basis for this chapter.

Who Trains the Teacher Who is in Service.—Whether the teacher in service is given additional training by a member of the faculty of the land-grant college, or by a member of the state supervisory staff (under the state board), or by one person representing both, or by two or more persons who are separate representatives of the land-grant colleges and of the state supervisory staff, and the extent to which these conditions prevail, are shown in Table 58. (Appendix B, Table F1.)

Table 58—Who Trains in Service the Teachers Who Were Trained Before Entering Service by the Land-Grant College Reporting and the Number of Institutions.

<i>Who Trains</i>	<i>Number of Institutions</i>
Member land-grant college faculty.....	19
Member state supervisory staff.....	14
Same person member of both.....	15
Different persons representing each.....	9
No training in service being done.....	10
Not replying	6

How Representatives of Land-Grant College Faculty and State Supervisory Staff Coöperate.—The manner in which coöperation is carried out in those states in which the teacher training in service is performed by representatives of the land-grant colleges and the state supervisory staff may be seen from the following extracts from replies—viz.:

By conferences, supervisor asks that a member of the faculty of the land-grant college be sent to assist teachers (Louisiana) ; faculty member works under direction of state supervisor of agricultural education—follow own graduates for a year (Minnesota) ; member of faculty works under state director (Mississippi) ; careful agreement as to duties and limitations of member of faculty (New York) ; conferences determine methods and policies, officers in same building, each reports visits to other (North Carolina) ; by mutual agreement state supervisors handle administrative problems, college man handles teaching problems (Pennsylvania) ; members of the teacher-training staff are used in itinerant teacher-training work (South Carolina) ; conferences and correspondence, supervisors have supervision and itinerant teachers teach methods (Texas) ; agreement as to methods, course of study, etc., frequent conferences, and keeping in close touch by correspondence (Vermont) ; monthly reports sent by teacher to professor of agricultural education, other reports to state supervisor, both visit teacher singly and together (Virginia) ; mutual agreement and coöperation—no written project (Wisconsin).

Special Teachers in a State Not Prepared in the Land-Grant College of That State.—The number of states in which there are special teachers not prepared by that state is shown by Table 59. (Appendix B, Table F1.)

Table 59—Are There Special Teachers of Agriculture in Service in the State Who Were Not Prepared by the Land-Grant Institution of That State? and Number of States in Which There Are Such Teachers.

Replying	Number of States
Yes	35
No	1
Not replying	12

Are Special Teachers Not Prepared by Land-Grant College Trained in Service by It?—The extent to which the land-grant college of the state extends its training in service to those not prepared by it is shown in Table 60. (Appendix B, Table F1.)

Table 60—Extent to Which Land-Grant College Trains in Service Teachers Not Prepared by It.

Faculty Member Trains	Number of Institutions
Yes	21
Yes, on request	1
No	8
No training in service done	10
Not replying	8

Instructor's Visits to Teacher in Service.—Table 61 gives the classified replies regarding the number of institutions in which the member of the faculty of the land-grant college visits the agricultural teacher at the latter's school. (Appendix B, Table F2.)

Table 61—Does Instructor Visit Teacher in Latter's School?

Replying	Number of Institutions
Yes	30
No training in service done	10
Not replying	8

How Often Visits Are Made.—The frequency of the land-grant instructor's visits to the teacher in his school is shown in Table 62.

Table 62—How Often the Land-Grant Instructor Visits the Teacher in the Latter's School.

How Often	Number of Institutions
Biweekly	1
Three weeks	1
Monthly	4
Quarterly	4
Semiannually	4
Not fixed—indefinite	12
No training in service done	10
Not replying	12

How Long Are Visits?—The length of the visits made are shown in Table 63. (Appendix B, Table F2.)

Table 63—Length of Visits of Land-Grant College Faculty Member to Teachers in Service.

<i>Length of Visit</i>	<i>Number of Institutions</i>
$\frac{1}{2}$ to 1 day -----	3
$\frac{1}{2}$ to $1\frac{1}{2}$ days -----	1
$\frac{1}{2}$ to 3 days -----	3
1 day -----	8
1 to 2 days -----	2
1 to 3 days -----	3
2 to 3 days -----	1
1 day to 1 week -----	1
Not fixed—indefinite -----	6
No training in service done -----	10
Not replying -----	10
(Summary)	
3 days or less -----	21
More than 3 days -----	1
Indefinite -----	6

Character of Help Given.—The character of the help rendered by the members of the land-grant college faculty when they visit the teacher at the latter's school is shown in Table 64. (Appendix B, Table F2.)

Table 64—Character of Help Given by Members of Land-Grant College Faculty When Visiting Teacher in Latter's School.

<i>Help Given in</i>	<i>Giving This Help Number of Institutions</i>
Methods -----	9
Demonstration teaching -----	6
Equipment -----	6
Suggestions -----	6
Outlines -----	4
Projects -----	4
Organization -----	4
Lesson plans -----	3
Constructive criticism -----	3
Teaching -----	3
Courses -----	3
Conferences -----	2
Laboratory work -----	2
Organized teaching projects -----	2
Plans -----	2
Reports of other schools -----	2
References -----	2
Professional, technical, adjusting misunderstandings, discussion, recitation, practical work, texts, school farm, objects, illustration, outline professional reading, notebooks, devices -----	1 each
(Summary)	
Teaching operations -----	21
Teaching plans -----	13
Materials and equipment -----	6
Administration plans -----	14
Miscellaneous, general -----	5
Indefinite, general -----	17

Instructor's Reports of His Visits.—The degree to which the land-grant faculty member reports his visits for training in service is shown in Table 65. (Appendix B, Table F2.)

Table 65—Number of Institutions in Which Land-Grant Faculty Member is Required to Report Upon His Visits to the Teacher in Service.

<i>Report</i>	<i>Number of Institutions</i>
Yes	26
No	3
No training in service done	10
Not replying	9

How Often Reports of Visits Made.—How often and when the visiting faculty member reports his visits is shown in Table 66. (Appendix B, Table F2.)

Table 66—How Often the Visiting Faculty Member of the Land-Grant College Reports Upon His Visits.

<i>How Often Reports</i>	<i>Number of Institutions</i>
After each visit	14
Monthly	6
Quarterly	1
Weekly	1
Annually	1
Indefinite	2
No training in service done	10
Not replying	13

To Whom the Visitor Reports.—The different persons to whom the faculty member reports and the number of institutions so reporting are shown in Table 67. (Appendix B, Table F2.)

Table 67—Officers or Departments to Whom the Faculty Members of the Land-Grant Colleges Report Regarding Their Visits to Teachers in Service and the Number of Institutions so Reporting.

<i>To Whom Report</i>	<i>Number of Institutions</i>
State director or state supervisor	16
State board or department	10
Teacher-training department, land-grant college ..	8
Director of school	1
Teacher of school	1
Dean of education	1
County superintendent	1
No training in service done	10
Not replying	12

Nature of Report.—The land-grant institutions were asked to mention the main features of the reports which the training instructor made after his visit to the school of the teacher who was in service. These replies are reported in Table 68, below. (Appendix B, Table F2.)

Table 68—Main Features of Reports Made by Training Instructors on Schools of Teachers in Service.

<i>Features in Reports</i>	<i>Number of Institutions</i>
Recommendations and suggestions made.....	16
Desirable features of work.....	6
Undesirable features of work.....	5
Character of work	5
Needs	3
Enrollment	2
Projects	2
Room	2
Check former records, schedule, condition of laboratories, progress of teacher, routine in brief, special developments in detail, purpose, duration, materials, methods, improvements, equipment, class work, field trips, county superintendent, board, lesson plans, strong points of teacher, weak points of teacher, attendance, opinion of superintendent, teaching (miscellaneous)	1 each

Reports of Teacher to Instructor.—The extent to which the teacher in service is required to report to the teacher-training department of the land-grant college is shown by the results of the questionnaire as tabulated in Table 69. (Appendix B, Table F3.)

Table 69—Number of Land-Grant Colleges to Which Teachers in Service Are Required to Report.

<i>Report Required</i>	<i>Number of Institutions</i>
Yes	11
No	16
No training in service	10
Not replying	11

How Often the Teacher Reports to the Land-Grant College.—The frequency with which the teacher in service is required to report to the land-grant college is shown in Table 70. (Appendix B, Table F3.)

Table 70—How Often the Teacher in Service Reports to the Instructor in the Land-Grant College.

<i>Reports</i>	<i>Number of Institutions</i>
Weekly	2
Biweekly	1
Monthly	2
Annually	1
As agreed	1
On request	4
No training in service	10
No reply	26

Main Features of Teachers' Reports.—What the main features are of the reports which the teacher in service

makes to the instructor of the land-grant college cannot well be tabulated, but can be shown by the following excerpts—viz.: Nature of seminar work, daily record work, enrollment, schedule, projects, character of teaching, condition of laboratories, plans and results of special features of the work previously agreed upon, school duties, project supervision, community activities, daily schedule of work for month details, subject for day, method by which taught, references used.

Correspondence Courses Used for Training in Service.—A tabular presentation of this is scarcely necessary, as only one institution of twenty-eight reporting replied "Yes," the other twenty-seven replying "No."

Reading Courses Used for Training in Service.—In this field the activities of the land-grant colleges are shown in Table 71. (Appendix B, Table F3.)

Table 71—Reading Courses Used by the Land-Grant Colleges to Train Teachers in Service and the Number of Institutions So Using Them.

<i>Reading Course Used</i>	<i>Number of Institutions</i>
Yes -----	5
No -----	23
No training in service -----	10
No reply -----	10

How Reading Courses Are Used.—The five states using them give the following as the methods of use—viz.: As references in projects; special improvement program; books, assigned; suggested list of books for year; books are suggested. In addition to these, one of the states not claiming to use reading courses requires one thesis each year.

Conferences Used for Training in Service.—The kinds of conferences that are used for training in service and the number of institutions utilizing each kind are shown in Table 72. (Appendix B, Table F4.)

Table 72—Kinds of Conferences Used by the Land-Grant Colleges for Training in Service and the Number of Institutions Using Each Kind.

<i>Kinds by Periodicity</i>	<i>Number of Institutions</i>	
	<i>General Conference</i>	<i>Groups or Local</i>
Annual -----	18	3
Semiannual -----	3	3
Quarterly -----	2	1
Occasional -----	3	2
Indefinite -----	4	3
No training in service -----	10	10
No reply -----	8	

A request was not made for a designation of the group conferences. Had this been done, probably more definite returns would have been available on this point.

Visits of Teacher in Service to Other Schools.—The question in the questionnaire was: "Do the teachers visit other public-school departments of agriculture with the teacher-training instructor?" The replies are found in Table 73. (Appendix B, Table F4.)

Table 73—Number of Institutions Which, as a Part of the Teacher Training, Conduct Visits to Other Public-School Departments of Agriculture for Teachers in Service.

<i>Conduct Visits</i>	<i>Number of Institutions</i>
Yes -----	9
No -----	18
No training in service -----	10
No reply -----	11

How Visits Are Made.—Seven of the nine colleges which make such visits reported as follows—viz.: Men arrange visits; conferences held at school in term; on advice of instructor; one day each year, at least, require each teacher to visit two other schools each year; in high-school departments near the land-grant college; one day in school strong where visiting teacher is weak.

Are Teachers in Service Trained by Requiring Them to Attend College During Year?—The extent to which training in service takes the form of college attendance is shown in Table 74. (Appendix B, Table F4.)

Table 74—Requiring Teachers in Service to Attend College During the Year.

<i>Required to Attend College</i>	<i>Number of States</i>
Yes -----	13
No -----	16
No training in service -----	10
No reply -----	9

How Long Attend College Each Year.—The length of time the teacher in service is required to attend college during the year and the number of states making the several requirements are found in Table 75. (Appendix B, Table F4.)

Table 75—Length of Time the Teacher in Service is Required to Attend College During the Year and the Number of States Making the Requirement.

<i>Length of Time</i>	<i>Number of States</i>
2 weeks -----	2
4 weeks -----	5
6 weeks -----	6
No training in service -----	10
No reply -----	25

What Time of the Year Teacher in Service Attends College.—Of those requiring the teacher in service to attend college, the replies vary somewhat as to the exact time, as shown in Table 76, though the summary shows substantial agreement. (Appendix B, Table F4.)

Table 76—Time When Teacher in Service Attends College and Number of Institutions Attended at the Different Times.

<i>Time Attends College</i>	<i>Number of Institutions</i>
Summer -----	6
Late summer -----	2
June to July -----	1
June to August -----	2
July -----	1
July to August -----	1
No training in service -----	10
No reply -----	25
(Summary)	
Summer term -----	13
No training in service -----	10
No reply -----	25

SECTION 2.—INTERPRETATION OF THE FACTS FOUND IN SECTION 1

Tables 58 to 60—Who Does the Training in Service?
While there are ten states reporting no systematic training in service, this is not so serious a situation as might at first appear when the conditions creating it are brought to mind—viz., that in some of the states the teaching of agriculture in special departments of the secondary schools is very new, and because of this there are few or no such teachers; that on account of the war the number of teachers in service has been materially reduced in those states formerly having many; that because of training in service being one of the most recent and advanced forms of teacher-training work, some institutions, while moving in that direction, as shown by replies to the questionnaire (Appendix B, Table F1), had not yet attained to this stage of development at the time of answering the questionnaire.

Table 58 contains, however, some very convincing facts regarding the constructive activities of the land-grant colleges in training agriculture teachers in service. From the number of land-grant institutions whose faculty members participate in the training of the special teachers of agriculture after these teachers have gone from the institution and have entered upon the regular work of a teacher, it is plain that most of the land-grant institutions are awake to the necessity of continuing the training of these persons after they have entered the field of actual teaching.

The extent to which the faculty members of the land-grant colleges are engaged by the state boards to act as state supervisors, combined with the extent to which the members of the faculties of the land-grant colleges coöperate with the members of the state supervisory staff in conducting the training of agricultural teachers in service, give evidence of an agreement as to needs and of a spirit of coöperation as to means that are sources of great strength to the land-grant colleges in their task of properly training special teachers of agriculture.

That this coöperation is a source of strength is apparent from the manner in which the parties to the coöperation are working out the plans for teacher training on the basis of fundamental principles that will tend to avoid friction and misunderstandings and that will utilize to the greatest advantage the elements of strength possessed by both the state departments and the land-grant colleges.

That the state departments having charge of the supervision of agriculture in the secondary schools have great confidence in the value of the land-grant college faculties as trainers of teachers in service is evidenced by their asking them in twenty-one states to extend their training in service beyond the following up of their own graduates and to assist in service those special teachers of agriculture who were prepared in other institutions than their own, as appears in Table 60.

A superficial consideration might lead one to the conclusion that the land-grant colleges were exceeding their jurisdiction when they extended this training in service to those agricultural teachers whom they had not trained previous to their entering service in the state. This position might be tenable if the training in service were considered to be merely an unpaid balance due the teacher at the time he left the land-grant institution which balance had not been paid for lack at the time of the right kind of funds; but when training of agricultural teachers in service is based upon the sane, sound principle that it is a duty which they owe to their several states and which they are especially fitted to perform, it is plain that the land-grant colleges are functioning properly in this field of teacher training.

All these facts seem to indicate clearly that the land-grant colleges are, as a class, active in the training of special teachers of agriculture while they are in service.

Tables 61, 62, and 63—Training by Visits: How Often and How Long. That visits are one of the most utilized means of training in service is plainly seen in Table 61,

wherein it appears that all of the states reporting teacher training use this form of activity. A reference to later tables shows that no other means is more largely used. (Tables 71 to 74.) That there is no standard number of visits to be made each year is not surprising, since the conditions, such as numbers of schools, distances, and numbers of other forms of training, such as conferences and visits to other schools, may make a fixed standard undesirable.

The great latitude each state reporting allows itself regarding the length of visits, as shown in Table 63, gives striking evidence of one thing—viz., that the itinerant faculty member realizes that he is not an “inspector” nor a “visitor,” but a real teacher trainer, and that his stay is to be determined, not by the conventionalities nor by the number of visits to be measured off per week or per month, but by the needs of the situation in that particular school at that particular time, and that it is his duty to remain long enough to render the service required.

Table 64—Character of Help Given. In the summary of this table it is seen that the help given, when specifically stated, emphasizes the two principal features of the work of the special teacher of agriculture—viz., teaching and administering. If the “materials and equipment” item were prorated between teaching and administration, as is probably justifiable, the specifically stated aids would be, respectively, 70 per cent to teaching and 30 per cent to administration.

For training in service, a teacher of academic subject-matter to place so large an emphasis upon the administrative features would be impossible to justify; but a distribution of 70 per cent to 30 per cent between the teaching and administration activities of the special teacher of agriculture is probably justifiable on the grounds of the character of his duties. Being a practical—and, in most instances, a vocational—subject, dealing with the dominant industry of all nonurban communities, its extra-classroom activities probably exceed those of any other secondary subject. The amount of administrative responsibilities of the special teacher of agriculture is very large in connection with the home projects of the school pupils, the home and school gardens of the school pupils, personal help to individual farmers, public meetings, such as farmers’ clubs, contests, fairs, exhibits, associations, and similar activities. To be successful, the special teacher of agriculture must not only be efficient in his class methods, but he must be equally efficient in the administration of those features connected with those community activities in the management of

which he participates to a greater or lesser extent. When to this is added the fact that during his student and practice teaching days he has been in close contact with classroom procedure, but that the administrative responsibilities of his position are relatively new to him, it seems probable that the land-grant college faculty members are sound in their procedure of placing relatively 70 per cent of their emphasis upon the teaching and 30 per cent upon the administrative duties of the special teacher of agriculture in their visits to his school for the purpose of training him in service.

Tables 65, 66, 67, and 68—Instructors' Reports of Visits to Schools. That the outstanding custom is for the visiting instructor to report after each visit appears in Table 66, from which it can be shown that 56 per cent of the institutions report in this manner, though 24 per cent of those who report at all report monthly.

No other system of reporting is represented by more than one institution. The coöperation between the land-grant colleges and the state departments or boards in the training of agricultural teachers in service is again seen in the data of Table 67, wherein it appears that land-grant college faculty members make reports to state boards or officers of state boards in twenty-six states and to their own department in the land-grant college in eight states.

The criticism, which is doubtless justifiable, against the land-grant colleges for not requiring the members of their faculties who train teachers in service to file a report with the agricultural education faculties of their own institutions may be somewhat tempered by the explanation that the land-grant college has the man who did the visiting, and in many states he is the only member of the department of agricultural education, and would have no one else to whom to report.

While this may modify somewhat the severity of the criticism, it should not be allowed to remove it altogether. There are two large purposes in having the members of the faculties of the departments of agricultural education in the land-grant colleges train the men who are in the service—viz., to improve the efficiency of the teacher who has gone from the preparing institution and who is now in service, and to enable the land-grant colleges to give better preparation to future prospective special teachers of agriculture before they enter upon actual service.

Provided the faculty member who visits the teachers to train them while in service always remains with his institution, is always at hand to state the conditions that he

found at each place visited, and provided he never forgets any of the details, reports to the department of agricultural education could be dispensed with; but since these conditions cannot be even approximately realized, every visit of such a faculty member to a teacher in service for the purpose of training should be reported to the land-grant college in a form to be available for reference.

The character of the items contained in the reports which the land-grant college instructor makes of his visits to the teacher who is in service may be seen from the data condensed and expressed in Table 68. The various items indicate that the report is intended to furnish a record of two kinds of information—viz., the conditions actually prevailing at the school and what the faculty member recommended or suggested to the local authorities—probably largely to the teacher of agriculture. From the original replies it might also be inferred, though not with any certainty of correctness, that the reports contained recommendations and suggestions to the parties receiving the report as to what such parties should do.

The replies contain little evidence that there is any general agreement as to the particular items to be included in the report, though this was not specifically asked for in the questionnaire.

From these tables it seems that, excepting for the failure to report more generally to the land-grant colleges the results of visits, the training in service given to the special teacher of agriculture by the members of the teacher training faculties of the land-grant colleges in general through the medium of visits to his school give evidence of practicability, and, considering the brief period of trial, promise of even greater efficiency.

Tables 69 and 70—Reports of Teachers in Service to Instructor in Land-Grant College. From these tables it is clear that while eleven institutions seem to have some form of reporting by the teacher in service, the irregularity of time and the dissimilarity of content of reports lead to the conclusion that as yet this does not constitute an important factor in the activities of the land-grant colleges in their work of training in service the special teacher of agriculture.

The same general conclusion is reached regarding the use of correspondence courses and reading courses from the facts shown in the paragraph regarding correspondence courses and in Table 71.

Table 72—Conferences for Training in Service. The fact that in all states where training in service is in oper-

ation, conferences—general, group, or both—are held, is gratifying, as it confirms the belief that the land-grant colleges have greater faith in the success of those forms of teacher training in which the trainer and the one to be trained meet face to face than in any form of teacher training *in absentia*, such as the use of correspondence courses, reading courses, or reports made to the trainer by the one being trained. The latter class of methods of procedure has a justifiable place in education, and, under some circumstances, particularly with content courses, may approach in value courses taken in the presence of the instructor; yet it does not lend itself very successfully to procedure where the elements of human personalities and local conditions are as important as they are in the teaching and community work of the special teacher of agriculture.

Table 73—Visiting Other Schools. Further evidence of the fact that the land-grant colleges are looking to the utilization of ocular, concrete methods of improving teachers of agriculture in service is shown in Table 73, wherein it appears that nine institutions are following the plan of taking special teachers of agriculture under the guidance of a faculty member to observe the work of another instructor in his own school. The system is not new, as it has been used by public-school authorities for many years sporadically and spasmodically; but it is here becoming a part of a system used by a teacher-training institution in the training of its constituency who are in service, and, as such, indicates a trend in the right direction of the land-grant colleges in their plans for training in service the special teacher in agriculture.

Tables 75 and 76—Teacher in Service Attending College. That many of the land-grant colleges are rendering distinct aid to the teachers of agriculture who are in service by instruction at the college of agriculture is shown in Tables 75 and 76. While the requirement of attendance is probably made and enforced by other authorities, the land-grant colleges are furnishing the training in these states. The land-grant colleges probably offer this same kind of collegiate summer school to men in service in many other states, though the attendance of the special teachers of agriculture in those states may be optional.

That this training is more or less intensive is shown by the training periods not being over six weeks in length, and that it is more than a conference is shown by the fact that none of the periods are less than two weeks in length, while 85 per cent of them are four weeks or over.

This length of time gives opportunity to strengthen

weaknesses in subject-matter, teaching procedure, and administrative procedure; to become familiar with means of obtaining future assistance from the agricultural college, the experiment station, the extension service, and the department of agricultural education; to obtain a new orientation based on experience on the part of former students; and to secure a proper adaptation to local agricultural and educational conditions in the state on the part of those originally prepared elsewhere.

That the states are agreed in requiring this college attendance to be in the summer is evidence that conditions of absence from the local school is an important determining factor, supported, no doubt, by the lax condition of community activities at that time and the special attention which land-grant colleges are able to give to the training of these men at that time.

SECTION 3.—CONCLUSIONS DEDUCED FROM SECTIONS 1 AND 2

The facts of Section 1 and the interpretation placed upon them in Section 2 seem to justify the following conclusions regarding the work of the land-grant colleges in the training in service of the special teachers of agriculture:

1. That the land-grant institutions, as a class, appreciate the necessity of continuing the training of the special teacher of agriculture after he has entered upon service.

2. That the coöperation of the land-grant colleges and the state departments or boards of education in the training of teachers in service is a means of increasing the efficiency of the land-grant colleges in their work of preparing special teachers of agriculture, not only as it relates to those in service, but also as it relates to those who are undergoing preparation previous to entering upon service.

3. That the land-grant colleges are recognizing their responsibility for training in service the special agricultural teachers of the states, whether or not those teachers were originally prepared by the land-grant institution of that state.

4. That the land-grant colleges which train teachers in service are unanimous in using personal visits of the member of the teacher training faculty of the land-grant college to the special teacher of agriculture in the latter's own school as a means of training in service.

5. That the number of visits made to any one school within a definite period has not been fixed by the land-grant colleges, nor is there a tendency toward uniformity in that regard.

6. That in the length of a visit to the teacher in service the land-grant institutions are not in agreement upon any definite time, but seem to adjust the length of stay to the needs of the teacher to be trained.

7. That in placing the largest amount of emphasis during their visits to the teacher in service upon the work of teaching and the next largest upon administration, the land-grant colleges are adapting their training to the needs of the teacher and his community so far as it can be measured by the topics to which training in service has been devoted.

8. That in keeping the state authorities informed by reports of the situation in the agricultural departments of the schools they visit and of what the teacher trainer did at the place of visit, the land-grant college faculty members are strengthening their teacher-training work; but to the degree in which they fail to file reports with the land-grant colleges, they are retarding the efficient development of the training by the land-grant college, not only of those teachers who are in service, but also of those to whom the institution will in future give preparation previous to their entering into service.

9. That the unanimity with which the land-grant colleges utilize conferences in addition to personal visits to the teachers separately and visits with the teachers to another teacher at the latter's own school, indicates the appreciation the land-grant colleges have of their responsibility for properly training the teachers in service, and also their appreciation of the value of ocular, concrete procedure in training teachers in classroom and community methods.

10. That the land-grant colleges are paying little attention to correspondence courses, reading courses, and other *in absentia* methods of training teachers in service.

11. That the land-grant colleges are emphasizing especially the training of the teacher in service by means of the personal contact of the faculty members of the land-grant college with the teacher in service through working with him in his own school, studying with him other agricultural departments in secondary schools and teaching him at the land-grant colleges during summer sessions.

12. That because of special teachers of agriculture who were prepared in one state being so frequently found teaching in a different state in which they are trained in service by a different land-grant college, the preparation of special teachers of agriculture should be, and is, a function in which the federal government participates.

13. That the land-grant colleges as the one class of teacher-training institutions supported and controlled joint-

ly by the federal government and the several states, are for that reason especially adapted to the training in service of the special teacher of agriculture.

These conclusions seem to warrant the general conclusion regarding training in service:

14. That the land-grant colleges, because of their federal and state relationships, are especially adapted to the training in service of the special teacher of agriculture, and, as a class, are moving in the right direction in this work, and, considering the conditions under which they have labored, particularly the short period devoted to the evolution of this feature of teacher training, have demonstrated their adaptation to the performance of this function.

CHAPTER VIII

DISCUSSION OF CONCLUSIONS.

"How the land-grant colleges of the United States are preparing special teachers of agriculture" is a question that may be interpreted to mean either of two things—viz., an inquiry into the facts of procedure followed by the land-grant colleges in the process of preparing special teachers of agriculture, or an inquiry into the adaptability of these institutions to the duty of preparing special teachers of agriculture.

To the former interpretation the answer would be a bare statement of what the land-grant colleges are doing in the preparation of special teachers of agriculture; to the latter interpretation the answer would be such an evaluation of the character of these institutions and of their efficiency in the preparation of this class of teachers as would lead to qualitative conclusions regarding their adaptability, as a class, to the performance of this important function.

This dissertation has endeavored to seek a reply to both interpretations of this question. The measure to which it has succeeded in furnishing the answer to the first interpretation may be found by an examination of the first section of each of Chapters II to VII, inclusive, since in those will be found the facts believed to be the most significant regarding the processes of training the special teachers of agriculture in the land-grant colleges obtained from dependable sources most competent to furnish the information desired.

The degree to which this dissertation has succeeded in furnishing the reply to the second interpretation of the question may be judged by a consideration of Chapter I and the second and third sections of Chapters II to VII, inclusive. In Chapter I is found a brief account of the origin of the land-grant colleges, which may furnish a basis for determining their character; and in the second section of each of Chapters II to VII an effort has been made to discover the significance of the facts of procedure as a measure of the adaptation of these institutions to the function of preparing special teachers of agriculture; and in the third section of each chapter the important facts and measures of adaptation are stated in more condensed form.

Since an attempt to answer definitely the original inquiry has been made in the conclusions which are found briefly stated at the close of each of the preceding chapters, it is not deemed necessary to repeat those answers here. How-

ever, as the conclusions at the close of each chapter are confined to the subject alone to which that particular chapter is devoted, it may be well, even at the risk of a degree of repetition, to emphasize some of the larger features brought out by the investigation, particularly those that are affected by the facts of more than one chapter. In doing this, attention should be directed first to some characteristics of the land-grant institutions that affect their adaptability to the preparation of this particular class of teachers.

The most fundamental and far-reaching characteristics are those which are due to these institutions being supported and controlled jointly by the federal government and the several states. Only by this coöperative support and control could have been developed so effective a group of colleges whose distinguishing characteristics are so outstanding.

That the growth, development, and success of these institutions of higher learning, the only group established upon this joint federal-state basis in the United States, have proved satisfactory to the American people, is amply demonstrated by the growing tendency to increase the number of systems whereby the federal government and the several states may coöperate in improving education, as evidenced by the recent passage of the Smith-Lever Act and the Smith-Hughes Act by the United States Congress and the prompt acceptance of the provisions of both by the legislatures of the several states.

A further evidence that the land-grant institutions have functioned satisfactorily to the people of the United States in their fifty-seven years of existence is that all congressional legislation subsequent to the Morrill Acts and all now pending has been based upon the fundamental principles established in the early Acts creating the land-grant colleges and providing for their maintenance and control.

Perhaps the highest compliment that can be paid to the success of the land-grant colleges in popularizing in the United States the joint support and control of education by the federal government and the several states is that their fifty-seven years of operation have seen public opinion turn from the point of view that education is a function to be confined to the several states, and local communities to the point of view that education is a function in which the federal government, the states, and the local communities are all interested and for the support and control of which they are jointly responsible. That this coöperative point of view is that of the present time is evident from

the passage of the Smith-Hughes Act relating to vocational education.

That public sentiment seems about to give its sanction to the extension of this joint federal-state support and control to education in general is patent from the progress made by the Smith-Towner bill in the recent Congress and the introduction of six bills of similar import to the present special session of Congress—viz., H. R. 7 (Towner), 1204 (Bankhead), 2023 (Raker), S. 15 (Smith), S. 12 (Smith), S. 1017 (Smith). (School Life, Vol. III, No. 1; July 1, 1919; p. 14.)

That the characteristics of the land-grant colleges which have enabled them to perform their functions to so high a degree of public satisfaction are of a nature that ought to enable them to train special teachers of agriculture with the same degree of success may perhaps be made clearer by a brief enumeration of those characteristics.

The generous financial support of both the federal government and the several state legislatures has made possible buildings, equipment, and men and women in sufficient quantity and number and of adapted quality, as shown in Chapter I. The presence of a large student body and faculty body has made specialization possible. The practical character of the education and experience of the personnel of colleges of agriculture indicates that the results of their labors will be both scientific and practical.

The existence of highly endowed experiment stations for thirty-two years in connection with the land-grant colleges has developed a scientific point of view and accumulated a body of scientific data invaluable to the teacher and to the practical farmer.

The creation of an extensive extension service through the land-grant colleges has developed a mutually helpful coöperation, which brings to the farmer the most approved practical processes based upon scientific foundations, and brings to the teacher and experimenter the vitalizing contact with the world of rural realities.

The Smith-Hughes law develops a mutual helpfulness and interdependence on the part of the land-grant colleges responsible for the improvement of agriculture and rural conditions, and the state departments of education responsible for public education in the state which are mutually beneficial.

To all of these, which in all human probability could not have attained their present degree of effectiveness under any other circumstances than joint federal and state authority, may be added a factor dependent wholly upon this

joint authority—namely, the similarity of plans and procedure in the several states due to the participation of the federal government in the control of the land-grant colleges.

That there is need for similarity of plans in the preparation of special teachers of agriculture is evident from the fact that in the state of Minnesota in the year 1913 the special teachers of agriculture in the high schools of that state had received their collegiate training for this service in eighteen different states. (Unpublished MSS. in United States Bureau of Education.)

Only institutions whose plans are brought into harmony through some such central influence as the federal government can hope to properly prepare a body of teachers who are to serve in states so far removed from the states in which many of them were prepared. This is particularly true when the teacher-training institutions are distributed throughout the forty-eight states of the Union.

Since adequate physical equipment for agriculture; a faculty and student personnel practically and scientifically acquainted with agriculture; a high degree of specialization; familiarity with the procedure and results of experiment stations, extension activities, and coöperation with state departments of education; and similarity of preparation in the several states, are essential to the proper preparation of special teachers of agriculture; and since the land-grant institutions are the only class of institutions in the United States enjoying all of the above-stated advantages through joint state and federal support and control, it seems plain that in their fundamental characteristics they are preëminently adapted to the efficient training of special teachers of agriculture.

The actuality of performing a certain function is not necessarily a concomitant of the potentiality for the performance of that function.

Before we can ascribe to the land-grant colleges a high degree of efficiency in the preparation of special teachers of agriculture we must know what use they have made of the favorable characteristics with which they have been endowed.

Chapters II to VII, inclusive, endeavor to supply this knowledge. One needs but examine the conclusions in Part III of each of these chapters to find what seems to be the character of the accomplishments of the land-grant colleges in this field.

One of the noticeable characteristics as indicated by what the land-grant colleges have done is that they have developed a keen appreciation of the great importance of the

work of preparing these special teachers. Despite the objections of those who thought it unnecessary to study how to teach and of those who said teaching agriculture outside of college was a fad and would soon pass away and of those who declared that studying such a subject as agriculture was not becoming "educated," the land-grant colleges proceeded to place their stamp of high approval upon the movement by establishing special departments for the preparation of special teachers of agriculture, naming them agricultural education, giving them administrative rank equal to the most important divisions of the institution, giving their faculty members high professional rank and almost complete control over all the features of the work essential in the proper preparation of teachers, such as choice of curriculum, approval of students, conduct of practice teaching, training in service, and teaching the more important of the courses in education.

Whether such generous opportunity to function would have been accorded to a new movement by any other class of higher educational institution than one devoted to a combination of the practical and the scientific is open to question.

That this cordial and open-minded attitude of the land-grant institutions has been a factor in the success attending their efforts to train special teachers of agriculture in the past and that it presages opportunity for a continuation of that success in the future seems reasonably certain.

Another noticeable feature which seems almost a corollary to the foregoing is that the land-grant colleges have placed at the disposal of those responsible for teacher training their faculties, equipment (both general and agricultural), experiment stations, extension faculties, practice schools, and summer schools. And this is no minor feature when it is realized that experiment stations, agricultural extension systems, special animal industry and crop industry equipment, supported generously by federal and state funds, constitute a combination of facilities found in no other class of institutions in the United States, and yet essential to the proper preparation of superior special teachers of agriculture in large numbers.

A third noteworthy feature is the high plane upon which the teacher-training work has been placed, as indicated by the limitations placed upon entrance to it. The entrance requirements to the most numerous class of teacher-training schools vary from that of those required by the first-class colleges to that of those required by some second-class high schools. The land-grant colleges, as a class (over 95 per

cent of them) have the same entrance requirements as the standard colleges of the United States, so far as number of units is concerned, and require the same for those students who are expecting to prepare for teaching as for other students. In addition to this, most of the land-grant colleges require two years of practical farm experience, which does not appear to be a requirement of any other class of institutions.

Another noticeable characteristic of the work of the land-grant colleges in the preparation of the special teacher of agriculture is the careful efforts made to give him during his college career sound and well-balanced schooling in agriculture, science, and education; to reserve his choice of specialization until his maturity, training, and experience enable him to choose wisely, and yet to make his choice sufficiently early to leave plenty of time for special preparation for his chosen work. In this way they have avoided the dangerous extremes of easy entrance, one-sided curriculum, and lack of special professional preparation so likely to mark institutions of applied science.

Not only in the character of the entrance requirements and the college curriculum, but also in other procedures, the extreme practicality of the land-grant college in preparing special teachers of agriculture is observable. In practice teaching students observe and teach mainly the same kinds of students they will find later in regular teaching; they teach the same subjects they will be required to teach in regular teaching; they receive criticism from the critic teacher and also from their fellow practice teachers; they watch expert teachers teach (largely agriculture); they cannot enter upon practice teaching until well through their course and until they have become intelligent observers of superior teaching. In many of these regards the land-grant colleges exceed in their standards teacher-training institutions in general in the United States. The same characteristic of practicality is seen in their training of teachers in service. There they discriminate between those methods that are valuable, but difficult, and those that are easy, but less valuable; and they put into operation the former. In this practical work of training the teacher in service they exhibit evidence of devotion to the needs of society rather than to those of persons formerly connected with their own individual institutions by training in service the teacher who needs it, regardless of whether or not he was educated in the institution with which they are connected.

Another distinct impression one obtains from the study is that, in addition to the general agreement of the institutions, as a class, upon many important features, there are some other desirable features in which a few institutions have made outstanding progress. These features are most often found in the newer fields of practice teaching and training in service. Some of these features are highly developed in one institution and some in another. In the few institutions possessing these features no one institution has a monopoly of all of them. Sometimes the commendable pioneering is found in one part of the United States and sometimes in another.

From this study of the characteristics of the land-grant colleges and of the use they have made of their facilities and opportunities in the preparation of special teachers of agriculture, one is deeply impressed with their eminent adaptability and their practical efficiency in performing this function for the people of the United States.

While it has not been the purpose at any time during the progress of this investigation to propose universal ideals for future attainment, but rather to search out the facts and interpret their significance, yet the hope is entertained that from the findings herein each land-grant institution may be able to select something which, when properly applied to local conditions, will serve to improve the quality of the work of that institution in the preparation of special teachers of agriculture, and by that means to raise the standards of this important service in all the land-grant institutions in the United States.

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